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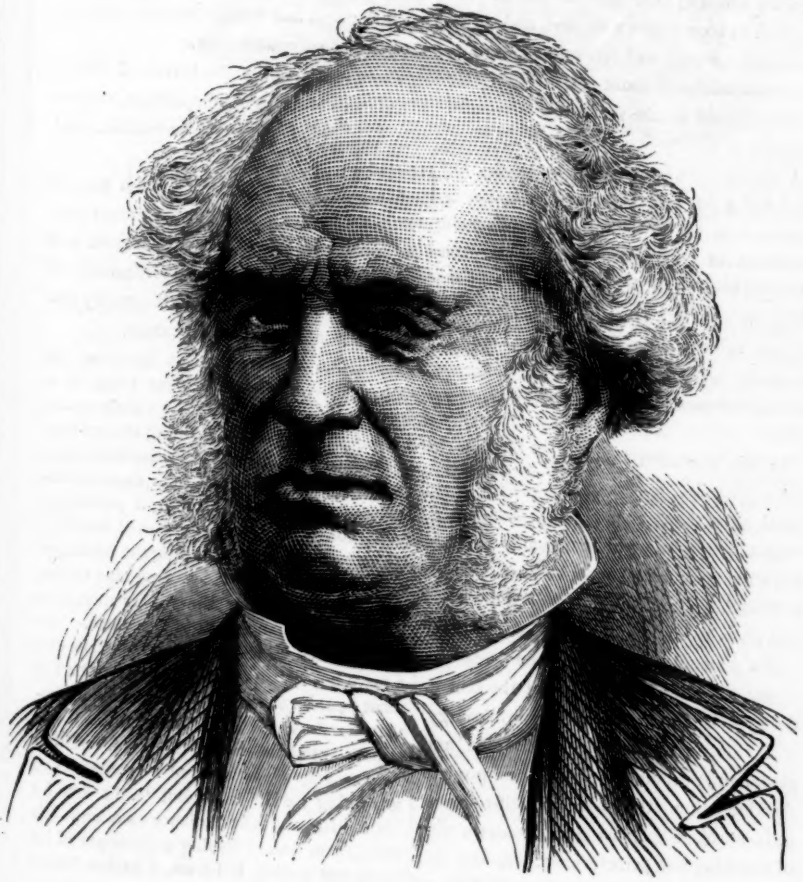


CORNELIUS VANDERBILT.

ALMOST within the space of a year New York has witnessed the death and burial of her three richest men—Astor, Stewart, and Vanderbilt—the last dying in

the midst of his colossal enterprises, after a painful illness of eight months, on the 4th of January. He was an old man, yet to the last exhibited a degree of mental freshness and vigor to which few men in middle age can lay claim. Inheriting a splendid physical constitution and an organism of wonderful intellectual energy, he commenced life for himself at an age when other young men are thinking of an apprenticeship. He resolved to accumulate a fortune, and set to work with courage and earnestness, permitting no obstacles to daunt or baffle him. He was successful at the very start, a man of property at twenty-five. He was a schemer, but his schemes were solidly founded. He accepted risks, but only when the chances appeared in his favor and his hands held the lines of enterprise. Advancing from strength to strength in his commercial operations, he at length stood at the head of the largest railway corporation in the country, wielding an authority over its interests almost unbounded and wonderfully successful.

In life, Cornelius Vanderbilt afforded to the contemplative a biological study of unusual attraction. Standing full six feet in height, with a frame of remarkable symmetry, a temperament of superior fineness, and a head large and strikingly organized, he was likely to command attention anywhere.

His phrenology exhibited the keen observer, the intuitive discerner of the real in thought and action, the man of spirit, energy, and enterprise, the man of courage and resolution, the man of prevision and prudent discrimination, the man of self-reliance, self-control, and positive convictions, the man of ambition and perseverance. He was also fervent and confidential in his social sentiments, appreciative of home and its associations. His full top-head showed a good degree of moral principle, Benevolence especially being large. He did not accord much respect to creeds or systems of religion, but he was capable of impressions and emotions of a deep and influential character.

There was no marked evidence of a sordid or avaricious yearning for money, but there were the indications of strong aspiration for power and domination. To excel, to control, to command, were chief features in his mentality; and these, backed up by great firmness and broad executive energy, made him a successful man.

There was much of the leaven of Mirthfulness and Hope in his disposition, rendering him good-natured, accessible, and genial.

Much of the life of a man who was so long and so prominently known, must now be familiar to intelligent Americans, and we therefore would ask the forbearance of our readers, if the following biography furnishes but an outline of his career.

Cornelius Vanderbilt was born on the 27th day of May, in the year 1794, on a farm on Staten Island. His father was a well-to-do agriculturist, sending the produce of the farm to the New York markets daily, and the young Cornelius took especial delight in navigating the craft, a periauger, which constituted the ferry-boat of that day. He very much preferred sailing the periauger to going to school. He worked also on the farm, and studied in the winter days, but never showed much love of literature. His delight was to be on the sea, and while he was a mere boy he was acknowledged to be the most fearless sailor and the steadiest helmsman on the bay. All his thoughts and instincts were bent in that direction, and that he was a good farm hand was due not to any liking for the work, but to his love for his mother and his obedience as a son. His one dream was of having a periauger of his own, and sailing it between Staten Island and New York. In those times there was no up-town region, for the business part of the city was in Hanover square and Pearl street. When Cornelius Vanderbilt became

sixteen years of age he bargained with his mother that he would plow eight acres of the farm and plant it with corn if she would give him one hundred dollars for the purchase of a boat. He earned the money and purchased the boat. But from the time that he owned this periauger it may be doubted if he ever again took hold of the plow. His hand had closed firmly upon the tiller which for the next half century was to be to him a veritable sceptre. By the time he was eighteen years old, he found himself part owner and captain of one of the largest periaugers in the harbor. During the war of 1812 he rendered material service in furnishing supplies by night to the forts about New York. In fact, his energy, skill, and daring became so well-known, and his word, when he gave it, could be relied upon so implicitly, that "Corneil, the boatman," was sought after when any expedition particularly hazardous or important was to be undertaken. Neither wind nor rain, nor ice nor snow ever prevented him fulfilling one of his promises. At one time, during the war (some time in September, 1813), the British fleet had endeavored to penetrate the port during a severe south-easterly storm just before day, but were repulsed from Sandy Hook. After the cannonading was over, and the garrison at Fort Richmond had returned to quarters, it was highly important that some of the officers should proceed to headquarters to report the occurrence and obtain the necessary reinforcements against another attack. The storm was a fearful one—still the work must be done, and all felt that there was but one person capable of undertaking it. Accordingly, Vanderbilt was sought out, and upon being asked if he could take the party up, he replied promptly: "*Yes, but I shall have to carry them under water part of the way!*" They went with him, and when they landed at Coffee-House Slip, there was not a dry thread in the party. The next day the garrison was reinforced.

In 1813 he married Miss Sophia Johnson, and about a year afterward moved to New York from Staten Island.

He obtained from the Government, in the spring of 1814, a contract for the transportation of provisions to all the forts in the bay for three months, and this entailed upon him the most extraordinary labors. He was determined not to give up his ferryage, which was exceedingly profitable, so he carried the provisions in the night time. There were six forts, each of which received its provisions once a week, so that during these three months his only night of unbroken rest was that of Sunday. But the profits of those nights were large and enabled him to build a beautiful little schooner for the coasting trade, which he called the "Dorad." Out of this he coined money, and in the following year, in 1815, he built a very large schooner, called the "Charlotte," which plied between New York and the Carolinas, under the command of himself or a brother-in-law, Mr. DeForrest. He was now above the reach of want and the necessity of incessant toil with his own hands, and this extraordinary boy, for such he still was, being only twenty-one years of age, began to think out in his practical way how the building of ships might be improved. He devoted his whole attention to the broad facts underlying construction, and very soon introduced such modifications as attracted the intelligence of the shipbuilding profession and confirmed the impressions of many that young Vanderbilt possessed other qualities besides nerve, great endurance, thrift, and modesty.

As a boatman, at the age of twenty-three, he was making about $5,000 per annum. But perceiving that steam would ere long become the great agent of navigation, he determined to study its application as a motive power. For that purpose, in 1817, he entered the service of Thomas Gibbons, then proprietor of a transportation line between New York and Philadelphia, and took command of a small steamer which made the trip between New York and New Brunswick. Vanderbilt remained in the employ of Mr. Gibbons about twelve years, the line all the time increasing in importance and profit.

He added much to his fortune while thus engaged, by taking charge of the stage house at New Brunswick, his wife managing it to the satisfaction of the traveling public.

Captain Vanderbilt found himself, at the age of thirty-five, worth $30,000. He then

decided to go again into business for himself, and refusing the advice and a liberal offer of his employer, he built his first steamboat. She was only a small craft, the "Caroline," afterward made famous from plunging over the Niagara Falls. His success now was more slow. He had much to contend against. Other steamboat lines had sprung up thick and fast about New York, and many were backed by great wealth. Repeated were the attempts made to "run off" his boats, but the captain, though completely exhausting his fortune, compelled each line to compromise, as one after another they interfered with him, until at last, and none too soon for the captain, it was thought best to leave him alone.

After this the number of Captain Vanderbilt's boats increased almost as his days. The steamers he introduced upon the Hudson were marvels in those early days. He was no longer called captain, the rank of commodore was hardly deemed sufficient, and soon he stood forth and was pointed to by all men, including his old antagonists, as the "Steamboat King" of America. He built for himself nearly forty steamers, the names of which are "Caroline," "Citizen," "Cinderella," "Westchester," "Union," "Nimrod," "Champion," "Cleopatra," "Augusta," "Clifton," "C. Vanderbilt," "New Champion," "Commodore," "Gladiator," "Staten Islander," "Huguenot," "Sylph," "Hunchback," "Red Jacket," "Kill-von-Kull," "Westfield," "Clifton No. 2," "Clifton No. 3," "Cornelius Vanderbilt," "Wilmington," "North Carolina," "Georgia," "Traveller," "Direction," "Central America," "Clayton," "Bulwer," "Linneus," "Thistle," "Emerald," and "Swan." Of these he lost none by fire, explosion, or wreck.

His plan was always to build better and faster boats than his competitors, to run them at their lowest paying rates, and thus furnish passengers with the best and cheapest accommodations.

The main features of Vanderbilt's career as a pioneer in commercial affairs are those connected with the Central American Isthmus.

The grant for a Ship Canal Company was made by Nicaragua, in 1849, to C. Vanderbilt and his associates. This grant was for the exclusive right to construct a ship canal from the Atlantic to the Pacific by the San Juan River and Lake Nicaragua, which at that time, by reason of the imperfect surveys made, was supposed to be practicable. It further gave the exclusive right to transport passengers and merchandise between the two oceans by means of steamboats over said waters, and by rail or carriage road, or other means of conveyance, over the land part of the route.

After much laborious investigation and large expenditure on the part of the Commodore, the canal was declared impracticable and the project laid aside. Soon afterward the Nicaragua Transit Company was organized, and Mr. Vanderbilt chosen President. He personally superintended the examination of the navigable facilities of the San Juan River, in the furtherance of his desire to find a shorter route to California, and succeeded in mapping out and fixing the transit route from ocean to ocean. Steamships were sent round to the Pacific to run in the line from the harbor of San Juan del Sur to San Francisco, and soon the entire line was in efficient operation.

Under his management the route became a favorite one with California travelers, and the price of passage from New York was reduced from six hundred dollars to three hundred.

In 1853, Vanderbilt sold his interest in this undertaking to the Transit Company, and built his celebrated steamship the "North Star." She was constructed, as all his vessels were, under his own supervision, in a very complete manner, and splendidly fitted up with all that could tend to gratify or please. In her he made a tour to Europe with his family, and everywhere his noble vessel with her splendid appointments, elicited profound attention. The "North Star" was the first steamer with a beam-engine to cross the Atlantic.

In 1855 the Commodore built the "Ariel" and "Vanderbilt," to run as an independent line to Havre, but at this time he was looking forward to the still greater work of carrying passengers and freights by rail. In

1862, one of the great difficulties of the Government was the transportation of large bodies of troops. The navy was small and inefficient just then, and Vanderbilt had a steamer to spare out of his navy. So he wrote to Secretary Welles, offering the "Vanderbilt" as a free gift. In his letter he said:

"I am induced to make this communication because of my desire to protect the Government against speculative attempts, and also to make it known that there are vessels of a capacity to meet all requirements, without resorting to vessels belonging to the so-called Confederate States or to those sailing under a foreign flag."

The "Merrimac" was just then in her glory, and the Government accepted the vessel, but fitted her out as a ram, protecting her engines with cotton bales, and sent her to sink the "Merrimac." President Lincoln, the Secretary of War, and the Commodore went down on board of her, but the "Merrimac" was disposed of otherwise. The "Vanderbilt" however, did good service during the rest of the war, and was some years ago sold at San Francisco to a firm of shipowners. She is now known as the ship "Three Brothers." Congress returned the thanks of the country to the Commodore "for his unique manifestation of a fervid and large-souled patriotism," and ordered a gold medal struck and sent to him. This medal weighed six ounces. On the reverse is the Commodore's likeness, and the legend, "A grateful country to her generous son," and on the obverse two female figures in bas-relief in the foreground, representing "Riches" and "The Sea," and in the background the steamer "Vanderbilt."

It was in 1857 that Mr. Vanderbilt commenced to operate in the railroad line, having sold his steamer business for something like three millions of dollars. He purchased stocks largely, giving his attention mainly to the railways with which his name had been identified as a manager for the past twelve or more years; and which, as the Harlem, Hudson River and New York Central, assumed under his skillful engineering a position of usefulness and power such as they had not known before.

The illness with which Commodore Vanderbilt was afflicted was not of an acute character, but was the culmination of a complication of intestinal disorders, from which he had been suffering more or less for many years. During his long life he had lived somewhat abstemiously, as compared with the way the average man of business and fortune is accustomed to live. He always took an abundance of exercise in the open air, and was not in the habit of remaining out of bed until late in the night. Perhaps his chief dissipation was in the use of tobacco, being an inveterate smoker.

His first wife died about ten years ago. Thirteen children were born of that marriage, ten of whom are living, viz., eight daughters and two sons. Most of these have large families, so that his descendants are very numerous. In August, 1869, he married Miss Crawford, of Mobile, Ala., a lady of wealthy family, but who at the time the Commodore met her was supporting herself as an instructor of music.

An examination of his body was made by several physicians with the view to ascertaining the nature of his disease. The result of the autopsy as stated in the *Daily Tribune* is the following:

"Extensive ulceration and perforation of the large intestine was found, and this was regarded as one of the immediate causes of death. It was believed by the physicians that the perforation of the intestine had been recent, and death from exhaustion had soon afterward followed. The lungs, liver, and other internal organs were all found to have been diseased to a considerable extent, and though they were not affected sufficiently to have caused death, yet their impaired condition added to the general drain upon the system, and the physicians stated that it hastened the fatal result. The walls of the bladder were found to be thickened and eroded in places, evidences that chronic cystitis had added to the general breaking down of the vital organs."

The *Tribune* writer adds:

"It was regretted that the head could not be examined and the brain measured and weighed, but out of deference to the wishes of the family this was not done."

We join with him in this expression of

regret, and would state that some years since an effort was made by Mr. S. R. Wells, who had previously examined his head for Appleton's *Railway Guide*, to procure a cast of Mr. Vanderbilt's head, but without success. We trust, however, that for the sake of science and truth, a proper representation of his head was obtained before his remains were consigned to the tomb—although we have not been informed of any measures being taken toward such an object.

Physiognomy, or Signs of Character.

Of the soul the body form doth take,
For soul is form, and doth the body make.—*Spenser.*

THE SYMBOLISM OF THE FEATURES.

[This essay is from the pen of the late J. W. Jackson, M.A.I., eminent in Great Britain as an ethnologist and author.]

AS the central feature of the face, the nose is of the utmost significance, both æsthetically and physiognomically. It is like a tower set on a hill, that can not be hid, and constitutes in itself the dominant element in that most important province of physiognomy—the profile, on which, therefore, we will here make a few observations. It was remarked by Lavater, that the time would probably come when the character might be predicated from the profile alone; and without homologating this doctrine, or affirming the principle which it involves, that the entire mental constitution can be discovered and so delineated from any one portion of the organization, we are quite willing to admit that no part of the face is so full of profound meaning as the profile. The perfection of its outline is the Greek type, more especially the archaic and ideal, or, shall we say divine, where the straight nose, on a level with the brow, forms, strictly speaking, only a prolongation of the forehead. Here thought and action are equally balanced. The impulses, without being weak, are controllable. The affections, though warm and intense, are subject to regulation. The moral principles are elevated, yet do not lead to sternness on the one hand or fanaticism on the other. While the intellectual faculties manifest perception and memory, reflection and imagination, in due proportion, so that the mind is at once retentive and yet creative, capable of the most profound thought and yet endowed with the finest taste. Let it be remembered that we are here speaking of the supposed excellence of an ideal type, to which actual humanity, even in its highest races and noblest individualities, makes only the remotest approximation.

Fig. 1.

Next to the straight or Greek profile is the Roman, which errs, however, on the side of convexity, where, nevertheless, its errors lean to virtue's side. The former is the profile of gods, sages, artists, and poets—it was that of Christ. The latter, on the contrary, is the outline of conquerors and heroes, of born kings and heaven-sent ministers—it was that of Cæsar. Here action dominates thought, and will rules benevolence, and the character, if exalted, is also stern, and sometimes even implacable and relentless. Nevertheless, in the present very imperfect state of the world, not only individuals, but entire communities thus characterized, are absolutely necessary. The Roman and Anglo-Norman types are instances in point. They did a work no

men less vigorously constituted could have accomplished. Conquerors of this order do not simply pull down, they also build up,

Fig. 2.—"Noble Roman."

and are thus, not uncommonly, the arch-founders both of dynasties and empires.

As the opposite and contrast to this, is the concave profile, which, speaking racially, is the outline of the great Turanian and Negroid families. This is the profile of weakness and subsidence. As an index of intellectual power, the short and inchoate nose, depressed at the bridge, and so, in a sense, dissevered from the forehead, gives promise of faculties only of an infantile and even embryonic order, according to the stage of development at which the nasal organ has arrived. Individuals thus characterized are not fit to be the leaders of Caucasian nations in the hour of crisis, when their destiny for centuries often depends on the heroic and almost superhuman efforts of a single generation. It was the profile of Kosciusko, and it is, though in a less pronounced form, that of Kossuth; and neither Poland nor Hungary had reason to rejoice in the success, however they might admire the honesty and patriotism or even the zeal and ability of their respective leaders. Both of these, however, were otherwise men of superior mould and of decidedly exalted character, and save in such a position as that which they unfortunately occupied, and which demanded a Cæsar, a Cromwell, a Washington, or a Napoleon, would doubtless have shone, if not as warriors and statesmen, then at least as orators and literati. To fully emphasize the concave nose, we must indeed have the prognathous mouth combined with it, as in the lower races, or in the more degraded individualities of our own. When the defect attaches only to the nose, and the mouth is good, there may be very superior powers of thought and a rare capacity for scholarship, as in the case of Gibbon, united, however, with more or less of incapacity for vigorous and commanding action, more especially in times of severe trial and under circumstances of unusual difficulty.

These being the observed facts of character in connection with certain types of

Fig. 3.—Negro Head.

nose, let us now see how far the symbolism of this organ agrees with and supports these conclusions derived from practical experi-

ence. The reason why the Greek nose, when effectually developed, presents such exalted indications as to character and endowment, is, primarily, that it constitutes

Fig. 4.—"Australian."

the perfection of the human type. It is an index of both the external and internal balance and harmony of the entire organism. Its close conjunction with the forehead is also a sign that cerebration and respiration interact effectually, which means, again, that thought and action harmonize. As a continuation of the forehead, coming down into the face, it also implies that a considerable measure of intelligence pervades the body, in the sense that its various members are apt and obedient instruments of the mind; the limbs, for example, being precise yet rapid in movement, the hands for manipulation, and the feet for pedestrianism.

It is in the perfect finish of the Greek nose, consisting not only in the duly proportioned and harmonic development of its several parts, but also in the chiselling and completeness of the entire organ, that we find the expression and index of a refined and well-balanced intellect, and so, perhaps, that of the poet and artist, in the highest sense of these exalted terms. Hence, in somewhat less gifted individualities, not specially endowed with the faculty of creation, it implies a taste for literature and art, and sometimes not only a power of appreciating their respective excellencies and beauties, but also of deeply sympathizing with their producers.

The Roman nose, proper, which must be carefully distinguished from the aquiline, is the appropriate symbol of strength and power, because it manifests these elements in its structure, while it is at the same time somewhat deficient in that exquisite grace and beauty which attach to the Greek type in its highest form of excellence. It is especially strong at the bridge, the index of action; neither is it deficient at the point implying a capacity for thought; but it is angular and out of due equipoise, and so indicates specialty rather than universality of endowment; and we know that the Roman, though great in war and policy, in law and administration, was, in literature and art, merely a pupil of the Greeks. In virtue of their strength, however, such noses imply a capacity for government, while, at the same time, they give evidence of great endurance under adversity and defeat. Their possessors are of the race of Titans, who laboriously forge the thunderbolts of Jove, and, we may add, sometimes launch them, regardless of the ruin they leave in their train. Usually accompanied by a strong infusion of the fibrous temperament

Fig. 5.—"Kosciusko"

or a rather powerful development of the osseous portion of the system, a decidedly pronounced Roman nose implies a rather limited range of ideas, but very clear insight as far as they extend. It is also often accompanied by a high sense of honor, frequently accompanied, however, by an utter want of all profound sympathy with the deeper feelings of others. This, of course, implies considerable strength in the self-

hood, arising, phrenologically speaking, from the predominance of the posterior over the anterior organs of the moral sentiments, this being generally accompanied by proportionate deficiency in the poetic or creative group of the intellectual faculties. All this is indicated in the fact that the most powerful development of the nose is from the bridge *downward*, showing that the dominant energies and ruling elements of the character tend to the external and terrestrial sphere of action and acquisition, rather than, as in the case of the true Christiform type, where the elevation of the nose is continuous and the whole moral region of the cranium is exalted, to the interior and celestial sphere of meditation and aspiration.

The terrestriality of a nose, once to all appearance, racially speaking, of high type, may now be seen at its maximum in the lower Jewish individualities of some of the great capitals of Christendom, where centuries of political oppression and social exclusion have driven a once gifted and heroic, though always bigoted people, to the all-absorbing pursuit of pecuniary gain as the one sole object of their earthly existence. In this case, where the specialty is very strongly pronounced, the merely, and we may almost say, grossly, terrestrial character of the nose is greatly increased by the drooping and often rather protuberant character of the somewhat bulbous point, altogether of the earth, earthy.

If the nose, otherwise well-formed, be too thin, it suggests a want of breadth and force in the general character. There may, in such a case, be keenness and penetration, but scarcely solidity and strength. Let it be distinctly understood that in the practical application of these remarks, the bridge of the nose is related to action and its point to thought. This want of substantiality is often an accompaniment of the aquiline type, when it indicates, if the possessor be in a position of command, the spirit of a martinet; if engaged in commerce, the grasping avarice that will overreach itself. In all circumstances, and under all conditions of life, it implies a tendency to exaggerate and dwell upon trifles, whether breaches of discipline or mean advantages in the way of gain, the latter being more especially indicated by the drooping point, whose sharpness suggests a narrowness of nature, and with this a corresponding want of power to plan or judge or feel aright about enterprises of great pith and moment.

Whatever the profile or the attributes of the nasal organ, the nostrils should be well marked and susceptible of dilation under deep emotion. It is here that the narrow noses, to which we have been alluding, often fail. They are hard and rigid, and indicate not only an utter want of all flexibility and suppleness in the mind of their possessors, but with this also, an incapacity for the appreciation of deep and tragic emotion in others. The owner of a narrow and immovable nostril always exists on the outside and surface of moral being, into whose arcana no other initiation is possible than that which comes through the painful baptism of heartfelt sympathy with every form of sorrow and suffering. Ere concluding with the nostril, we would observe that as the nose is fundamentally a respiratory organ, and as the dilating nostril enables it to discharge this function more effectually, it must be regarded as intimately related to the sphere of action, while not wholly dissevered from that of thought.

As a contrast to any of the more prominent and effectually developed noses of which we have been speaking, there is the concave in all its varied forms and degrees of weakness and debasement. This type has neither the equipoise of the Greek nor the energy of the Roman. As already remarked, it is infantile in its milder forms and embryonic in those more pronounced. As such, it is indicative of the like imperfection, arising from immaturity, in other portions of the organization, more especially the brain. Persons so organized may be deep thinkers, as in the case of Socrates and Coleridge, but as the principal defect is in the bridge, they want those attributes which ensure success in the sphere of action. This arises from that breach of continuity in their interior being between conception and execution, whereof the lowness or utter absence of the bridge is an unfail-

ing, because a symbolic, indication. Such men, more especially when subject to inspirational illumination, may originate the germs of grand ideas, but they want the organizing faculty which could weave them into a connected system, hence they generally leave this to their disciples. When born of Caucasian parents, persons so constituted may be regarded as instances of arrested development or of atavism; of the former, when the other features are good, and of the latter, when they present anything like a general resemblance to the lower Negroid and Turanian type of the inferior races. Now, in neither case can they be considered as even relatively perfect specimens of humanity, and hence their incapacity for the effective discharge of some of its higher duties.

Not only does the depression or absence of the bridge indicate that breach of continuity to which we have already alluded, but the shortness of the nose in this type is also equally indicative of the want of power to maintain deep, earnest, continuous, and well concatenated thought, on any subject demanding an extensive range of interdependent and sequential ideas for its due elucidation. While the inchoate character of the organ is also unmistakably symbolic of the merely germal form of the conceptions originating in a brain of which such an unfinished feature is the assured index.

We have already spoken of the mouth as being intimately connected with the function of alimentation, and as being also the organ through which we exercise the sense of taste, and thus in virtue of its duties and grosser susceptibilities it is very properly placed in the lower portion of the face. Now, it may be readily understood that a feature thus characterized and related, should not be too large in the way either of width or prominency. As an organ principally devoted to the earlier processes of alimentation, its most important and influential relationships are abdominal. As still partially employed, however, by the higher types of men, and predominantly so by the lower, as well as by the quadrupedal mammalia and birds, for the purpose of respiration, the mouth also maintains thoracic relations, not to be despised in any attempted interpretation of its profounder significance. While as the organ of rational speech in man, the mysterious channel through which the counsels of wisdom and the trumpet blasts of eloquence are given to the world, it has also cerebral connections, and that, too, with coronal and sincipital as well as occipital development, in other words, with our moral and intellectual as well as affectional and passional nature, which show that this, the lowest of our facial features, whether in position or function, is nevertheless, at times, an outpost and instrument of the noblest portion of our spiritual being. This very important fact has a deeper significance than appears on the surface. It indicates that the totality of our corporeal organization may ultimately become a befitting agency for the expression and manifestation of our noblest powers of thought and our most refined susceptibilities to emotion. Only think of the mouth of a shark or an alligator being so far transformed in shape and translated in function as to become an organ for the song of a Lind, the eloquence of a Chatham, or the wisdom of a Socrates. Why, after this, should we despair of the Spirit's power to ultimately transfigure the entire organism and render it a befitting, though temporary, dwelling for the celestial visitant appointed to occupy it as his terrestrial tabernacle.

The mouth should not be removed too far from the nose; in other words, the upper lip should not be too long, because this involves removal to a distance from the superior senses of smell and sight, implying comparative isolation from the moral and intellectual influences of our compound being. Persons so constituted, even if otherwise well organized, are generally rather obstinate, and if, in addition to its undue length, the upper lip be also convex in place of concave, they are also prone to be sulky and ill-tempered. This arises from the fact that such convexity, like the prognathism of which it generally constitutes an element, is a remnant of the brute type, not yet quite expurgated from some of the lower families and less harmoniously framed individualities of man. If, however,

conversely, the upper lip be too short, a want of will in relation to self-command is decidedly indicated, and however refined, sensitive, or gifted persons thus organized may be, there is often a tendency to that laxity of morals which arises from the established habit of easy self-indulgence. In this case the superior senses, and with them perhaps the moral and intellectual nature, seem to suffer by re-action from the too close proximity of the mouth, indicative of the almost abnormal sway of the passions over a mind otherwise richly endowed and oftentimes nobly constituted, for this type of mouth is generally united to features otherwise cast in the purest mould of intellectual beauty and refinement. However otherwise formed, the upper lip should be divided by a well-marked hyphen, indicative of the due divarication, and with this the efficient bipolar interaction of the two sides of the body. Let us remember in this connection, that imperfection in ultimates is chiefly of importance, as being indicative of some corresponding defect in the higher links of causation, thus rendered manifest in the lower sphere of effects.

For the same reason the chin, as a separate feature, should be distinctly separated from the mouth, and not, as in the case of the exceedingly prognathous, be confused with it, such an interfusion of different features being indicative of a corresponding and proportionate conglomeration of ideas. It is here that we touch the keynote of any possible scientific system of physiognomy. The face, as a whole, and the individual features as its constituent members, are neither the source nor seat of mental power, whatever its character, whether passional, affectional, moral, or intellectual; but they are nevertheless of the utmost importance as indices of interior and profounder portions of the organization, and notably of the brain and nervous system. This, then, is the true significance of physiognomy as an index of character. It has reference to the sphere of effects, not of causes, but of effects so near, and therefore we may presume so intimately related to the realm of causation, that those who would penetrate to the arcana of the latter can not do better than study and endeavor to interpret the deeper meaning of the former.

ACQUISITIVENESS AND ITS RELATIONS.

ACQUISITIVENESS is the propensity to acquire. It disposes to the accumulation of wealth, substance; to provide for the future; to lay up in summer the superfluity of nature's bounty not wanted for present consumption, as a store for winter use when nature is more niggardly; to lay up against a rainy day, or for old age. It is common to man and some of the animals. Squirrels, for instance, in the season of nuts, hide away in their holes and nests a stock for their support in winter, when the ground is covered with snow, and their natural food inaccessible. Their existence as a race, as well as the existence of the human race, depends upon the exercise of this faculty.

In man this faculty, as is the case with many of the other faculties, attains full development only in a state of civilization. The savage, especially in tropical climes, makes no provision for future wants, no provision for his future existence. If he gets enough to satisfy his hunger to-day, he is content; he takes no thought of the morrow. He lives from hand to mouth; many in civilized life do much the same. Such are known as improvident persons. These never get rich; they are no better off, in point of worldly goods, at the end of the year than at the beginning. Indeed, sometimes they are worse off, finding it difficult to "make both ends meet," as the saying is.

The stimulus given by this faculty is that which keeps the world moving. "Money makes the mare go." This it is which induces men to engage in enterprises of great "pith and moment." This is what sets in motion the spindles of our cotton mills; digs deep in the earth for the treasure buried there; sets commerce afloat, whiten-

ing the ocean with its sails; turns the shaft of the steamer, and erects splendid palaces to trade. Literature, science, and the arts follow in their train; the comforts and enjoyments of life are multiplied, and even its duration extended; civilization advances and man progresses. Without wealth there could be no civilization.

There seems to be at this time an excessive development of this faculty. This is a money-getting age. Never in the history of nations have so large private fortunes been acquired in so short a time as in this country. While many, perhaps the majority, are satisfied with the steady gains—especially if they be considerable—of a successful business career, others in haste to be rich, are not content with this; they must needs, therefore, forsake the fields of legitimate trade, and enter upon the unexplored territory of speculation. Fortunes are thus made in a day, and sometimes as quickly lost. But disaster does nothing to cool the avidity of the speculator; he tries again, the fluctuations of fortune are repeatedly experienced, and some men have been rich and poor half a dozen times in the course of their lives. With the large development of this faculty possessed by our people, the late war, with the demoralizing tendency appertaining to all wars, and the ready opportunities it afforded for speculation, seems to have excited it to an abnormal activity. It has even corrupted our politics, and fraud and peculation have become rife in nearly every department of government.

Acquisitiveness, pure and simple, loves wealth for its own sake; yet modified by temperamental and other conditions, it causes different individuals to prefer different kinds of wealth. Some prefer investments in bonds and stocks; others in houses and lots, in lands, or in other kinds of real estate. For example, the great Illinois farmer—we can not recall his name—who went on adding acre to acre and farm to farm, but who was never known to sell a rood of land, until you could ride for fifteen miles through his cornfield—but a fraction merely of his landed estate. Another man prefers stocks as an investment. Like Vanderbilt, he may have the ambition to own an entire railroad, or two or three of them, all to himself. It is only where the faculty exists in great development, and no other faculty or faculties exist in sufficient development to give it direction, that we find a man who loves money itself more than all else. No bonds or stocks for one of his class, he wants money, money, money. With some of this *ilk*, too, bank-notes even will not answer; they must have the gold, the glittering gold; and this, if they have at the same time large Cautiousness, they will not entrust to the bank for security, but will maintain watch and ward over it themselves: counting and fingering it often to know if it be all there, as well as to enjoy the pleasure derived from the sight of it. This is the organization which produces the *genus* miser.

But it is the many and varied combinations of Acquisitiveness, with other faculties, that afford the most interesting study to the devotee of mental science. The acquisitions of property, resulting from these combinations, are as various as the combinations themselves. Take, for example, a man in whom the home-feeling and the domestic affections are largely developed in connection with Acquisitiveness. Such a man will strive to acquire a home of his own, and this will be fitted up with all the modern conveniences and appliances, the better to insure the comfort of the loved ones who are to inhabit it; and then after possession has been taken, improvements are constantly being made in the house and grounds, and additions to the furniture and ornaments, in order still further to enhance the happiness of its inmates. Add to this a good degree of Alimentiveness, and the subject will spread a well-laden table, and have perhaps in addition a well-stocked wine-cellar; and if he be a man fond of friends and of social companionship, frequent guests will be found at his board.

Suppose a man to have a large organ of Acquisitiveness, and at the same time a good development of those faculties which confer a literary taste. Such a one will bring together a great collection of books; he will have perhaps the largest library in the community in which he lives. If, in-

stead, he be a man having a large development of those organs which give a love of the fine arts, he will have a gallery of pictures, or a collection of statuary, or perhaps both. This combination it is which makes a man, like the late A. T. Stewart, buy one of Meissonier's paintings at an expense of $60,000, and another one to offer $100,000 for the "Immaculate Conception," now in possession of a convent in Belgium, or another still to pay $2,000 for Powers' "Greek Slave."

If a man with large Acquisitiveness be devoted to some one of the natural sciences —mineralogy, for instance—he will, in process of time, collect a great number of specimens of the different minerals and form a cabinet of them. If, instead, his mind should run in the direction of numismatics, he will have a collection of coins—gold, silver, and copper coins of every nation under the sun. With others, again, Acquisitiveness takes the direction of postage-stamps. The subject of it will show you the stamps of every government on the face of the earth. Still others become autograph-hunters; and he or she writes to every prominent personage in the country requesting the favor of his or her sign-manual. Such, generally, carry their albums along with them wherever they go, and when they meet you, request the pleasure of your signature.

Acquisitiveness, in connection with large Veneration, gives a fondness for things that are old, and makes one desire to possess objects in use or fashion by former generations. Such a one will have his house filled with old furniture. If he has a passion for ceramic art, he will be a frequenter of auction sales where old china is bought under the hammer. Such men often spend fabulous sums in this way. They will pay almost any price for a cracked tea-pot, if they can only be assured that it is two hundred years old. Persons with this combination are also extensive buyers of other kinds of old traps.

There is another exhibition of the faculty of Acquisitiveness we might allude to here, and yet we hardly know how to characterize it. We mean that combination of Acquisitiveness with certain of the other faculties, which, while the subject of it has neither a taste for fine art, nor natural science, nor yet a literary taste, disposes him to make a collection of objects of interest and of great rarity of all kinds. He will have, perhaps, a twig from the willow which Shelley planted; a snuff-box made from the wood of the old elm that used to stand on Boston Common; a cane made from the timber of the frigate *Constitution*, "Old Ironsides;" or a bottle of water from the Dead Sea or the River Jordan; besides other things too numerous to mention—articles that might come under the comprehensive term *bric-à-brac*. The house of such a one is a literal museum—a perfect curiosity-shop. All that is wanting is a hair from the head of navigation, a toe from the foot of the Rocky Mountains, and a small piece of the wood of the True Cross, to make the collection complete.

We have combinations, also, in the triple form. Take, for example, a man with large Acquisitiveness, large Veneration, and a well-developed literary taste. Such a man will have a fine library, perhaps a large collection of books; but they will be mostly old books—black-letter folios, and books printed soon after the invention of the art of printing. This is the kind of man to give $1,130 for a copy of Elliott's Indian Bible—of which there are but two or three extant—the highest price ever paid for a book in America.

Take Acquisitiveness and Veneration in combination with a love of the fine arts, and the subject desires old paintings and other works of art. He buys, preferably, the productions of the old masters—Raphael, Murillo, Michael Angelo. If he be devoted to numismatology, he wishes old coins. This is the man to pay $300, as has been done, for a copper cent of Washington's time.

Thus we see that Aquisitiveness leads not alone to the accumulation of money, or of interest-bearing investments, but also to the acquisition of other kinds of property, yielding no return except the satisfaction of acquiring them, and the enjoyment of possessing and contemplating them afterward. Low in the scale of humanity is that

organization which loves money and wealth alone—loves them for their own sake. We see, too, how it is that persons gratify their Acquisitiveness in spending large sums of money in the acquisition of objects upon which they set a higher value than the money itself. Such value money, not for itself, but for what it will purchase.

Large Acquisitiveness is not at all inconsistent with large Benevolence. Individuals of this organization are more likely than others to bestow their charity where, and in such a way, that it will do the most good. They will supply money to the needy or unfortunate to relieve their immediate necessities, but their good deeds do not end here. They are, in most cases, willing to take some trouble to put the applicant in a situation to help himself; and this is the truest charity. Such persons often engage in enterprises, wherein money is to be made, in order that they may have the means wherewith to gratify their charitable impulses. Such have within themselves a double source of enjoyment. Where a man with large Acquisitiveness alone takes pleasure in making money, and a man with large Benevolence alone takes pleasure in spending money on charitable objects, the man with a good development of both these faculties has equal pleasure in acquiring wealth, and in disbursing it. We can not but regard such an organization as a fortunate one—its possessor having two sources of happiness, where others differently constituted have but one.

Phrenologists, in their description of the faculty of Acquisitiveness, usually say, among other things, that it gives rise to the feeling of *meum* and *tuum*—distinguishes between mine and thine. We have known some individuals, with quite a large development of Acquisitiveness, in whom the ideas of *meum* and *tuum* were very indistinct and confused. They seemed to be not always able to distinguish between their own property and that of others, and would not hesitate to appropriate the latter whenever the opportunity presented. We usually find a great development of the faculty in inveterate thieves. We once knew a man of this character. He would steal everything he could lay his hands on—things that were of no particular use to him either, and often of but little money value; but he never could resist the temptation to carry off any portable article within reach, when unobserved. When at last he was detected and his apartments were searched, a collection the most heterogeneous imaginable was found. There were locks and hatchets from the hardware stores, china bowls from the crockery stores, pickled pears from the groceries, ribbons from the milliners, hats from the hatters, boots and shoes from the shoe stores; neither hats nor boots perhaps of a size to be worn by himself. He had, in fact, samples of the stock of nearly every dealer in town—articles that were of no earthly use to him, and which he was never known to offer for sale. Yet this man was so strongly disposed to lay up a hoard that he could not resist the impulse to add to it whenever he had a chance. We can not but regard any such manifestation of the faculty as abnormal or morbid.

JAMES COULTER LAYARD.

THE SEA OF SOUND.

My soul is floating out upon
A Sea of Sound to-day,
And every wavelet of this sea
Is bearing her away.

And every little blade of grass
Is singing in the breeze;
And every little singing-bird,
Keeps time, upon the trees.

The gentle zephyrs, lovingly,
Are playing on the vines;
And every tinkling rivulet,
To swell the sound, combines.

List to the sweet-lipped humming-bees,
The soaring lark's clear bell,
The linnet, and the oriole *—
What wordless tales they tell!

* * * * *

Now, hear the trump and clarionet
Come trooping from afar;

* Nightingale.

The organ grand, and love-toned flute,
The harp, and the guitar.

I hear a dear and childish voice
Articulating tone;
Contrasting, yet according with,
The sea's undying moan.

Now, hark! There is a mournful air
Runs through each dark-leaved pine;
Next comes the sweet domestic sound—
The lowing of the kine.

It thunders! Ah, the mighty bars!
My soul in awe is bound;
And, tremblingly, I float upon
Eternal waves of sound.

* * * * *

I hear a million, million steps
Of busy human feet—
Which, as the ages onward roll,
Time's measures still repeat.

And every note of song or sigh
That quivers o'er the earth—
The wailing of the dying soul—
The infant's cry at birth.

The roaring of the king of beasts,
The fierce hyena's yell,
The merry chimes of marriage bells,
The dismal funeral knell.

And through, and over all I hear
The whirr upon the street,
Whose major and whose minor tones
The chords of Life complete.

* * * * *

My soul is floating onward still
Beneath the vaulting gray,
And through each glimpse of blue I catch
The strains of endless day.

I bathe in ecstacies within
This mystic Sea of Sound;
The atmosphere is vibrating
With music all around.

Sweet symphonies, and melodies,
And cadences I hear,
Which vary as they fall upon
My ravished, listening ear.

O, words for us are all too weak,
And language is too poor;
But words may cease, and language fail,
Yet sound shall aye endure.

—GRACE H. HORR.

TONGUES OF FIRE.

"Light, more light."—GOETHE.

SEEKING to penetrate the cloud-land of the supernatural, I have been struck with the analogy that connects the spectral lights of spiritualism with the od-flames of the scientist. The halos of the saints, the starry crowns of the medium, the beatified expression of the mesmerist, the lines of flame streaming from the fingers of the ancient goddess, and the modern psychic, seem but the rays of one central sun which our wise men have not yet carefully observed. Looking at these lights through the prism of analogous fact, let us dissect and analyze their subtle shades of meaning. Throwing aside the smoked spectrum of ancient superstition, "looking no more through a glass darkly," let us glance in the first place at the lights of mesmerism.

Here we find the universal testimony to accord with Dr. Townshend, who affirms, "Mesmerees, when clairvoyant, almost invariably mention a bright light which they perceive before their foreheads." Referring to a blind patient, he adds: "Johann always spoke of a kind of internal light, which he compared to sunbeams, diffusing itself over the region of his head. Whenever I pointed the tips of my fingers toward his closed eyes, at the distance of about two inches, with a quick, darting motion, he had the sensation of a flashing light and sparks of fire passing, as it were, before him." Miss Martineau, in her "Letters on Mesmerism," relates a similar experience, in regard to her maid-servant, upon whom she experimented in private. "On Saturday she told me that she now saw the shades of things, that she should soon see clearer. The next evening she went into a great rapture about the gleams becoming brighter, so she could see all she wished. At another time Mrs. B—— was being mesmerized late one evening, when leaning near she tranquilly observed, 'How beautiful *that* is!' 'What is beautiful?' 'The bright light streaming from all your fingers.'"

A similar appearance is seen upon the ancient tablets unearthed from ruined cities, the god Anubis being generally represented with fiery rays darting from his outstretched hand, while the "tongue of fire" lighting upon the person of our later-day spiritualist is the surest sign of modern mediumship. "Is not your son a medium?" asked one clairvoyant of another. "Yes; why do you think so?" "Because I see bright lights about his head and hand." This conversation, occurring in my hearing, between two ignorant women who had probably never investigated the subject of mesmerism, or heard of the god Anubis, finds a fitting place in this connection, and leads quite naturally to the curious facts regarding Mr. Brown, the mind-reader. The New York *Times*, of August 10th, asserts, "Some of the Chicago people have gone wild over the performances of a young man from Iowa, named J. K. Brown, who can see or read the unuttered thoughts of others." After citing numerous successful experiments, the account continues: "Mr. Brown himself is not aware of the cause producing these results. He says, when the subject's hand is placed against his head, rays of lambent light appear to emanate from all sides of his brain, following, as he supposes, the thoughts of the other person. When an object is selected to be pointed out, the mind of the subject being directed toward it, an unusual line of light appears, and this he follows steadily, which always leads him to the object. The size of this light varies with the size of the object. In his sixth year, when playing with other children, he found contact with them produced peculiar sensations; while in the dark, sparks of what seemed to be fire would fly from the ends of his fingers, if his hands were brought suddenly together." Mr. Brown having left us in the darkened play-room of childhood, still mystified over these omnipresent sparks, we decide to follow "the unusual line of light" of his maturer years, which leads us straight to Major Buckley in his European parlor.

Major Buckley threw a great light on this subject when he produced conscious clairvoyance in eighty-nine persons, forty-four of whom were able to read mottoes through nut-shells. Let us submit to his magic influence awhile, and see if we can not pierce to the heart of this matter. Finding it "a hard nut to crack," we will simply look through it with our clairvoyant vision.

"He first makes slow passes from his forehead to his own chest. If this produce a blue light on his face, strongly visible, the subject will probably acquire conscious clairvoyance. If not, or if the light be pale, the subject will only become clairvoyant in the sleep—that is, when in perfect trance. Taking those persons who see a very deep blue light, he continues to make passes over his own face, and also over the object—a box or nut, for instance, in which written or printed words are enclosed, which the clairvoyant is to read. Some subjects only require a pass or two to be made; others require many. They describe the blue light as rendering the box or nut transparent, so that they can read what is inside. This reminds us of the curious fact mentioned by Von Reichenbach, that bars of iron or steel, seen by conscious sensitives without any passes shining in the dark with the od-glow, appeared to them transparent like glass. If too many passes are made by Major Buckley, the blue light becomes so deep they can not read, and some reverse passes must be made to render the color of the light less deep."

Mr. Mayo also gives an account of a gentleman who tried to mesmerize his brother for disease, with the help of a maid-servant. When entranced, she said she perceived that the patient's od-emanation was of a pink color, and the brother's of a brick color, and she endeavored to find some one with the same colored-od to suit her master.

What is this od-emanation which we constantly behold in our entranced condition? As the light attends us everywhere now, as we can enter dark libraries, and read through closed doors, let us peep into the books tucked away on the high shelf and see if we can not get some explanation of this od-light. Here we read: "Among the discoveries of Von Reichenbach is the fact that the od-force makes itself visible as a dim light or waving flame to highly sensi-

tive subjects. Such persons in the dark see flames issuing from the poles of magnets and crystals."—*Mayo.*

Now we catch a glimmer of the truth about these mystic gleams. These will-o'-the-wisps, dancing from one hard matter-of-fact to another, until we come at last to a positive hypothesis, upon which we rest for the present. The mesmeree, the mind-reader, the medium, or psychic, are simply conductors of this od-force (which is probably but another name for the natural agent, called by Mesmer a *fluid*). When powerfully charged, they emit these rays from different parts of the person. So far, these tongues of fire do not speak an unknown language, they simply tell us in plain terms of the presence of an unseen agent—a positive fact of nature.

Let us listen awhile longer, as we inquire what are some of the most prominent manifestations of this peculiar power. In the first place we must glance at the universality of this phenomenon. That these lights are no new fancy, that they are no reflection from our modern imagination, is evident from the writings of the ancients. Iamblichus, an avowed spiritualist of the first century, speaking of the mediums in his day, affirms: "And sometimes, indeed, an invisible and incorporeal spirit surrounds the recumbents, so as not to be perceived by the sight, but by a certain other co-sensation and intelligence. The entrance of this spirit is also accompanied with a noise, and he diffuses himself on all sides without any contact, and effects admirable works. But sometimes a bright and tranquil light shines forth, by which the sight of the eyes is detained, and which occasions them to become closed, though they were before open. The other senses, however, are in a vigilant state, and in a certain respect have a co-sensation of the light unfolded by the gods, and the recumbents hear what the gods say."

In order to understand fully, to interpret wisely, this unknown tongue of the spirit, we must become entranced with Miss Martineau, and enter the domain of her physical experience. She says: "Twenty minutes from the beginning of the magnetic seance, I became sensible of an extraordinary appearance, most unexpected and wholly unlike anything I had ever conceived of. Something seemed to diffuse itself through the atmosphere, not like smoke nor steam, nor haze, but most like a clear twilight, closing in from the windows and down from the ceiling, in which one object after another melted away till scarcely anything was left visible before my wide-open eyes. First the outlines of all objects were blurred; then a bust, standing on a pedestal in a strong light, melted quite away; then the opposite bust; then the table, with its gay cover; then the floor and the ceiling, till one small picture, high up on the opposite wall, only remained visible, like a patch of phosphoric light. The busts appeared ghost-like in the dim atmosphere, like faint shadows, except that their outlines and the parts in the highest relief burned with the same phosphoric light; the features of one, an Isis, with bent head, seemed to be illumed by a fire on the floor. Wherever I glanced, all outlines were dressed in this beautiful light, and so they have been at every seance, without exception, to this day."—*Letters on Mesmerism.*

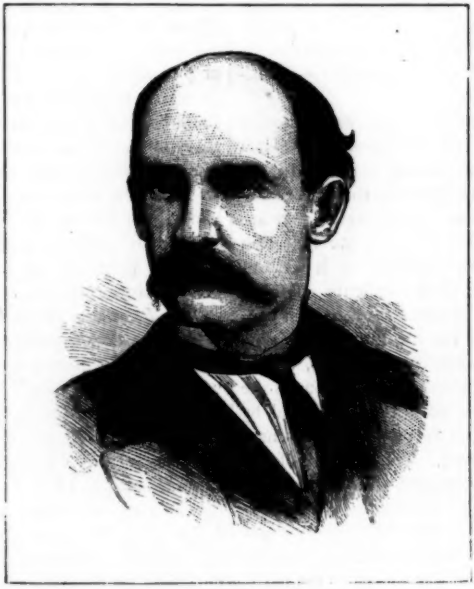
Now we are prepared to listen to Mr. D. D. Home, who gives a similar experience in "Incidents of My Life:" "After saying my prayers, I was seated on the bed and about to draw the sheet over me, when a sudden darkness seemed to pervade the room. This surprised me, as I had not seen a cloud in the sky; and on looking up I saw the moon still shining, but it was on the other side of the darkness, which still grew more dense, until through the darkness there seemed to be a flame of light, which I can not describe, but it was similar to those which I and many others have seen since, when the room has been illuminated by spiritual presence. This light increased, and my attention was drawn to the foot of my bed, where stood my friend Edwin. He appeared as in a cloud of brightness, illuminating his face with a distinctness more than mortal."

Does it not appear that Mr. Home's moon is a pale reflection of Miss Martineau's od-glow? Do not our modern mediums simply mesmerize themselves, when clairvoyance

and the curious phenomena attending the state of mesmeric trance supervene? Certainly the dæmons of the first century and Mr. Mesmer's god find entrance in the same brilliant style, and we have only to visit our Chinese brethren to find the fanatic devotees are wont to obtain what they consider an ecstatic communion with Deity by fixing themselves in a particular position and steadfastly gazing at the end of the nose. They assert that if they persevere for a considerable time in this singular practice, they will suddenly perceive a beatific light, and be favored with direct and colloquial intercourse with God, though their conversation is tacit and inaudible to any but themselves.

Shaking hands with Anubis, finding divinity at the end of the Oriental nose, we come at last to an intimate acquaintance with a little god among the busts of Miss Martineau's parlor, but we strip off the offending *G* and call it *od*.

JULIA M. HOLMES.



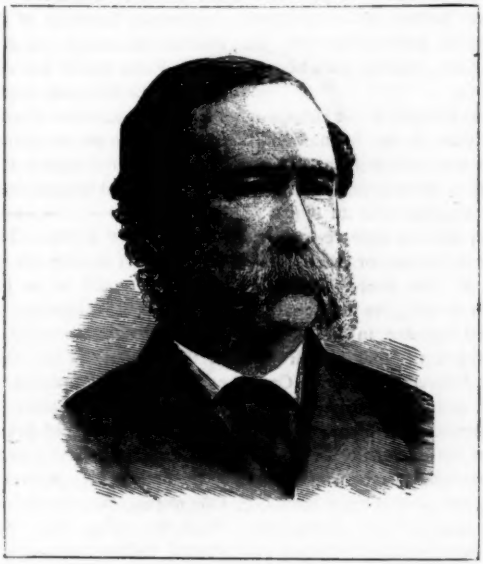
DAVID H. CHAMBERLAIN.

THE RIVAL GOVERNORS.

THE State of South Carolina has usually been conspicuous for political agitation almost since the days when the American colonies organized a government and declared themselves independent of English authority. An occasion for controversy has always found elements there ripe for activity—men ardent and impetuous in the expression of their opinions, bold and aggressive in the maintenance of what they assert as their rights. The people of no other State have shown a more chivalric spirit in "standing by" community opinion in social and political matters. The late civil war, of course, did not serve to reduce their excitability, and if in the cooler North feelings of bitterness were aroused which now and then some occurrence brings to the surface, it is but to be expected that in an ill-governed, sadly "reconstructed," and almost impover-

ished State the factions born of war and discordant opinions would come into collision.

The late election for President, so closely contested, and still undecided, has been productive of disturbances serious enough to demand the interference of the strong arm of the national Government. Florida, Louisiana, as well as South Carolina, have been theatres of conflict between Democrats and Republicans, each party claiming victory and charging illegality and fraud upon the other. In South Carolina we have the spectacle of partisan strife carried to the extent of two organized governments representing the two contending parties, each with its chief executive and associate officers. The portraits represent the Governors, and the reader can form his own estimate of their characters and competence, so far as tolerable likenesses will permit him to make such an estimate. A brief sketch of the career of each man may aid in an endeavor of the kind.



WADE HAMPTON.

David H. Chamberlain is a New Englander, having been born in West Brookfield, Worcester County, Mass., June 23, 1837. He was educated in the common school of his native place, at Phillips Academy, Andover, and the Worcester High School, and then at Yale, where he was graduated in 1862. Selecting the law as a profession, he attended the Law Department of Harvard College, and was graduated therefrom in 1863. Laying aside his Kent and Story, he enlisted in the Federal Army, and served to the close of hostilities in the States of Virginia, Maryland, and Texas.

In December, 1865, he settled near Charleston, S. C., with the view to becoming a cotton planter. Two years later he was called into political life by his election as a delegate to the Constitutional Convention. Upon the adoption of the new Constitution, in April, 1868, he was elected Attorney-General, a position which he filled for four years. At the close of his term of office he retired to private life, and began practicing law in the cities of Charleston and Columbia.

In September, 1874, he was nominated by the regular Republican Convention as its candidate for Governor; was elected in

November by a majority of 11,000, and inaugurated on the 1st of December.

As a lawyer, Governor Chamberlain ranks among the foremost of the younger members in his profession. Reverdy Johnson once paid him the following high compliment: "If he pursues his profession as he has commenced it, it will place him, if he is not already there, at the very head of the profession which even now he adorns."

Of Wade Hampton, claimed by the Democrats to be the Governor-elect of South Carolina, the reader has doubtless frequently heard, as he has occupied a prominent place in Southern politics for many years. He is about twenty years older than the Republican champion, having been born in Charleston in 1818.

His grandfather, General Wade Hampton, was a gallant officer in the Revolutionary War, and one of the most eminent citizens of South Carolina in those days. His father, Colonel Wade Hampton, was an officer in the war of 1812, and an aide-de-camp to General Jackson in the memorable battle of New Orleans. At the time of Colonel Hampton's death, in 1835, he was regarded as the wealthiest planter in the United States. The subject of this sketch was graduated at the University of South Carolina, studied law, and in the early part of his political career served as a member of the Legislature of his State.

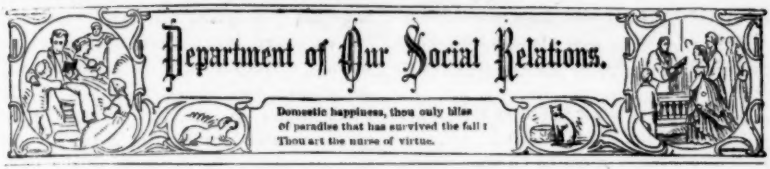
At the commencement of our civil war he raised a regiment, and entered the field. The "Hampton Legion" was, through the war, one of the most popular organizations in the Confederate army. His first battle was that of Manassas, or Bull Run. He was made a Brigadier-General, served during the Peninsular campaign of 1862, and was wounded three times at Gettysburgh, Penn., July 2, 1863.

He was shortly after promoted to the ranks of Major-General and Lieutenant-General, and after the death of Stuart was given the command of all the calvary in Virginia. On the 16th of September, 1864, he managed to capture 2,500 beeves and 400 prisoners from a detachment of General Grant's army; the cattle proving very acceptable to his troops, as they had for several days been in a starving condition.

Early in 1865 General Hampton was sent to South Carolina, and commanded the rear-guard of the Confederate army then falling back before General Sherman. During the burning of Columbia city it will be remembered that General Hampton and General Sherman charged each other with its uncalled-for destruction.

Since the war, Wade Hampton has been more conspicuous than the majority of his late companions-in-arms. In his participation in the measures of reconstruction and the effort to stimulate the industrial and commercial interests of the South, he has asserted his acceptance of the results of the war. From one of his addresses delivered in 1866, the following is quoted: "Let us, at least, prove ourselves worthy of the rights we claim; let us set an example of good faith, and we can then appeal with double effect to the justice and magnanimity of the North."

VALUE OF LIFE. — The precise monetary value of human life in various parts of the world would be an interesting subject for careful investigation. In Dahomey we probably begin at one of the lowest rungs of the ladder. A few beads or a strip of calico there will purchase a well-developed specimen of humanity. In China any criminal possessed of $15.00 may procure a substitute, who, having deposited the money in the hands of his poor relatives, will cheerfully undergo the operation of decapitation. Then, ascending a little higher on the allegorical ladder, we come to slave-marts, where often an elephant's tusk is worth four women. It is unpleasant to come nearer home, and ask what some phases of so-called civilized life are worth. A German professor, who rejects Malthusian doctrines, computes that, taking the whole world for an average, a woman is worth about one-eighth of a man. He thinks that there are at least 250,000,000 unmarried women in the world. As a rule, out of Europe, horses are more valuable than members of the fairsex. However, Esquimau women are scarce, and each one is probably worth two men. In new settlements, such as many in California, a woman rises vastly in estimation—sometimes outvaluing seven men.


Department of Our Social Relations.
Domestic happiness, thou only bliss
of paradise that has survived the fall!
Thou art the nurse of virtue.

HOME-STUDY SOCIETIES.

THE problem of a thorough education is much harder for young women than young men. The arrangements and customs of a young man's life suit a long course of study. The average age now of students entering colleges is eighteen or nineteen; after this comes a three years' course in a professional school, and often, besides, two years in some foreign university. During all this time the young man's business is study; he may frequent social parties, or otherwise amuse himself, but he is expected at certain hours to be occupied with his books. His future success depends in a large degree on the perseverance with which he devotes himself to these intellectual employments.

With a girl it is entirely different. She leaves her school or college at the age her brother enters. She is then absorbed in society, and much of her time is spent in "visiting;" and though she may take lessons in music or some modern languages, it becomes exceedingly difficult to arrange and carry out any satisfactory plan of study. She is not supposed to have any steady or obligatory occupation; her time becomes everyone's; and the best habits gained by long years of study are lost. Even if she have time for reading or improving herself, she may have no one to direct the line of her studies, or to test them afterward, so that her intellectual work becomes extremely desultory, and its results of little value either to herself or others. And yet an hour or two spent every day on a consecutive plan of study would not interfere either with social or housekeeping duties, and would, in the end, fit her vastly better for whatever position she may hold in the future. It is a wonder that those reformers, who are so anxious to improve woman's political position, have not turned their attention to this —the fatal weakness in woman's training.

Certain Boston ladies of high social position have set themselves in a quiet way to endeavor to remedy this evil in woman's education. They have formed an association called a "Society to Encourage Studies at Home," which has now been in operation a few years. It contains members in every part of the country, even some from Colorado and Louisiana. Every lady joining pays a small fee, and is expected to devote a certain amount of time to the course of studies which she selects. There are committees on different subjects, who have taken the best advice and framed courses of reading and study. One recommends a course on "General History," for instance; another on zoology, another on botany, or physical geography or art, or German and French, or English literature. The circular giving the lists of books recommended is before us, and contains excellent authorities; the historical wisely embodying distinct periods, instead of covering long and general outlines of history.

The member who selects her course is expected to write to a member of the committee an abstract from memory of what she has read, and her own ideas upon it, and her difficulties in the study. The other replies, criticises, and advises, as she may think best; the object of the plan being, of course, to compel each student to think out what she has read, and thus to correct the peculiarly feminine weakness of vagueness and inaccuracy of thought. It appears from a recent circular that on the list of students were two hundred and ninety-eight names. The record shows 67 per cent., or two hundred and four, who have done "satisfactory work;" thirty-five taking the highest rank,

one hundred the second, and sixty-nine the third. Only 21 per cent. have worked indifferently or failed. The average time given by the members has been about eight hours weekly.

The choice of study indicates the earnest character of the work assumed. Only sixteen take French, nineteen German, thirty-six art; while forty-four choose science, one hundred and eighteen English literature, and one hundred and twenty-seven history. The plan of the association is certainly admirable, and ought to be imitated in every large city. It brings the most thoughtful and cultivated ladies throughout the country into correspondence on topics of vital importance, and produces thus a certain Freemasonry of culture. Hundreds of girls in remote localities, or in cities where they are overrun by demands of the most trivial kind, can thus be put in communication with women of the highest culture, who are in earnest for mental improvement.—*N. Y. Times.*

PEACEMAKER GRANGE.

"The age culls simples;
With a broad clown's back turned broadly to the
Glory of the stars."—*Mrs. Browning.*

CHAPTER XV.

SALUTARY SALTATION.

"WE are to have a dancing party to-night, Mr. Reynolds," said Alice Templeton, one evening early in December; and she looked just a little askance at that young man.

"What, with champagne supper and no going home until three o'clock in the morning?"

"We seldom have any champagne here; and if you want to 'go home with the girls in the morning,' you may be able to persuade some of the damsels of East or West Haven to stay here till three o'clock, and then allow you to escort them home. The majority of us, being already at home, will doubtless be in bed by eleven o'clock. We believe that a principal cause of the habit of turning day into night that prevails among fashionable people, is their desire to show their superiority to the common herd, who are compelled to work all day, and must therefore sleep at night."

The party was held in the main floor of the restaurant building, as it was one of those assemblies to which all the members and employees of the association were invited. It had been found by experiment, that the necessity of appearing neatly clothed and not displaying uncouth manners, was sufficiently apparent to the few employees who might offend the taste of the majority, to keep them away from such reunions. But there are very few such. Some of the more fastidious members never attend these soirees. They confine themselves to the receptions given by the rich members and the sympathizers living in the villas. This exclusiveness does not hurt any one. These people are regarded with favor by the poor members, so long as they show no arrogance. It is evident enough that their connection with the institution is useful to it, because their expenditure furnishes ready cash, and helps to swell the income of various departments and the size of wholesale purchases. Indeed, wealthy people living on the interest of their money, are not apt to "put on airs" in Peacemaker Grange, because public opinion there tends continually more in the direction of regarding all interest, rents, and profits, on capital—at least all rates of these that will do more than keep the capital intact—as unnatural and usurious. Where such an income exists among Peacemakers, it is gradually being dropped as a matter of gratulation, in fact is relegated to dark corners as a topic, just as the cut-glass decanters and silver tankards (tokens of over-indulgence in ardent liquors), that were once ostentatiously displayed upon the side-board, are now found shelved in the china closet and butler's pantry.

Many hands make light work. When such a party is to occur, that restaurant floor is soon magically transformed. The partitions usually separating the central court from the dining-halls are removed, and only iron pillars remain, supporting the inner walls of the building. The tables and chairs largely disappear into the basement, and are speedily replaced by elegant chairs, sofas, ottomans, etc., from public and private parlors near at hand. The whole floor—one hundred feet square—is seen to be covered with the new "hard-wood matting," in beautiful patterns, which also form one pattern as a whole. The court, with its glass roof, is glittering with lights, and adorned with banners, etc., as the other glass court was for the Quarterly Festival.

Printed programmes were distributed, and it appeared that the "exercises" were to include some tableaux, singing, recitations, and a bit of theatrical without the histrionic appurtenances. A corner was shut off by screens for these purposes.

By eight o'clock the crowd was pouring into the building from all quarters, and as every window was also a door, there was no fear of lack of exit from this ball-room. People came and went as the whim seized them. There was order without restraint. A general manager was assisted by numerous ushers, whose duty was rather honorary than onerous. They must introduce people who needed or desired introduction, and see that the affair moved harmoniously. In each of the four corners was a bell upon a table. One tap would bring the nearest usher. Two taps, in a sudden emergency, would bring the manager.

The costumes were neat, but not gaudy. The wealthy toned down their style, and the poor did their best to tone up, without foolish expense or ostentation. All came with the idea of enjoying and adding to the general enjoyment.

Edith and Alice came in together, looking, of course, everything that was lovely. They were soon joined by the Rev. Anthony, who was dressed simply and neatly in a dark-brown suit, and without the white choker which he wore on his arrival.

"Where is your inseparable friend?" asked Edith.

"You should have seen him," said Edgar, laughing. "We came early. I, with malice aforethought, had recommended 'full evening dress.' Having inquired of the Judge as to your customs, I came all unaccoutred as I am;" and he glanced not unapprovingly at the well-fitting garments upon his shapely person. "But Herman, poor innocent, met me here in full bloom—black suit, swallow-tail, white vest, necktie, and kid gloves. He looked at me with horror, and said, 'Why, how is this? You recommended full evening dress?'

"'Yes, for you,' I replied gravely.

"'Sold!' he cried, savagely scowling at me. Then he pulled off his kid gloves so viciously that he tore one of them. After looking a while at the men coming in, and seeing no one as gorgeous as himself, he said despairingly, 'This won't do,' and rushed out to change his clothes."

Presently Herman came in demurely, dressed neatly like Anthony.

"Ah, there is the culprit fay," said Edgar. "And what has become of his bright plumage?"

"I will select my own plumage after this, false priest," replied the broker scornfully.

Very pleasant was the sight of the demeanor of the various classes toward each other in this truly co-operative ball. That different classes were present was evident. Highly educated and refined people were there, taking a cordial interest in the affairs of the commonalty; while the latter showed an old-fashioned deference and respect for their superiors with none of that "good as anybody" air which some would expect to see at such parties. The five hundred people gathered there acted toward each other as one might suppose the same persons would act if thrown together on an island in the sea without means of escape, though having abundant subsistence. They felt an absolute mutual dependence. They were separated from the rest of the world, and each knew that each other was in some important sense promoting his or her welfare.

The dancing began at an early hour. The hearts of our young friends beat high as the

sets were formed, and they knew who their favorite partners would be and that they would not be disappointed. Alice and Edith both coquettishly informed the New York gentlemen that they were engaged for the first dance, and then sailed majestically through the figures with two of their local admirers, whose hopes were thereby greatly raised. In the second dance, however, the New Yorkers had a full opportunity to engage with their charmers that peculiar melange of sportive intimacies and contacts, and concerted, rhythmic motions in which the properest modern dancing consists.

Farmer Hallet got alongside the Judge, and said to that philosophic person: "This seems all very natural and pleasant, though my early sectarian education has prejudiced me against it."

"I also," said the Judge, "was sternly opposed to this sort of thing in younger days. In fact, I never danced a single measure in my life. But year by year, latterly, a sheet has been let down to me in spiritual vision, full of such supposed 'unclean beasts,' and apparently from the Divine Wisdom has come that same voice that Paul heard, 'What God has cleansed, that call not thou unclean.' With regard to this and many other matters, we Peacemakers have come out, as the pastor says, from under the frowning cliffs of Sinai. Personally I have, for several reasons, long since concluded that decent dancing, where there is no hugging or other indecorous demonstration, is a very important means to that end which we hold perpetually in view —the making it easy to be good. Human nature can be trusted in a large measure with its own right culture, even under the most adverse circumstances. In all ages and nations the instincts of young unmarried people especially, have taught them the use as well as pleasure of such concerted, harmonic, social festivity, in which individuals are continually brought into exhilarating contact with persons of the other sex."

"But do you not find any harm coming from dancing?"

"Oh, I was taught to think it 'only evil continually.' I remember that I used to be a co-laborer of a good Methodist brother, who sang this song, which impressed me very much:

"'Come all good people, while I tell—
A soul, I fear, has gone to hell.
She went to frolic, dance and play,
And thus she spent the livelong day.'

"I think myself, now, that any girl who employed all her time in this way would, if taken suddenly into the other world, find that she had given herself a very poor start in spiritual life. But my study of physical and spiritual hygiene leads me to look at the matter thus. As soon as puberty is reached in either sex, the young man or maid, if normally developed, begins to feel a sense of incompleteness. The child's sense of being an entity, an entire being, ceases. A craving is felt through the whole physical and spiritual nature to be supplemented, complemented, completed by a counterpart of the other sex. The young man's thoughts of all things in the universe seem to him but half thoughts, except so far as he compares them and modifies them in consultation with one or more congenial persons of the other sex. The young girl feels the same craving, even more intensely.

"But the body is only the expression, the outgrowth of the soul—its physical correspondent and analogue, radiating from the soul as a centre, come all manner of subtlest and less subtle essences, auras, 'odic forces,' magnetisms, electricities. These differing in the two sexes, have each a natural impulse toward intermingling with those of the other sex—positives with negatives. In the congenial married couple this interflux is complete. All the beautiful by-play between innocent young people of the opposite sexes is nature's sportive, jocund, coquettish prelude, ante-type, fore-taste of true conjugality. The old Puritan style of training greatly interfered with the natural intermingling of all these opposite elements. This was a great hardship to young men especially. They were, as it were, bottled up without vent, so that where strong natures finally asserted themselves in this direction, it was usually with violence. Youth who would have been well content to wait patiently for a suitable marriage, if they had

been encouraged in these sweet public intimacies and contacts with girls which would have given their spiritual and physical conjugal magnetism sufficient outlet, took the bit in their mouths, when the tight rein was no longer endurable, and rushed headlong into wild dissipation. These dear young folks—so rosy and healthy and happy—will retire to rest at a seasonable hour with their conjugal impulses and longings so largely satisfied, that their sleep will be sound, their dreams sweet and pure. They will not be filled with desperate resolves to consummate premature unions. We have no elopments from this family. Why, the very exercise of dancing is the finest imaginable. When engaged in out-of-doors especially, it is analogous to horse-back riding and better, for it requires more use of the lower limbs. When the body generally and all the higher faculties have abundant play, the cerebellic force is so completely used that it does not so clamor for exercise through amativeness. This is well illustrated by the effect of decent theatricals upon average persons. When a young man, I made all sorts of experiments. I took a six weeks' course at the theatres of Cincinnati once. I found the effect excellent. Entering heartily into the plays each night, I was in a real sense engaged in the imaginary scenes, and went home at midnight nearly as much exhausted in body and soul as if I had been through similar real scenes, with all their tragic and comic incidents. I was leading an isolated life at that time, and would have had to endure all the hermit's 'temptation combats,' but for this relief. Theatricals are not so necessary for people who have abundant social intercourse."

So much for the philosophy of the thing; let us look again at the young folks. There had been an interlude of tableaux, in which Alice and Edith had been very aggravatingly displayed. They were being rescued from terrific perils, by daring and tender young men of the society, who gazed in stony triumph upon the New York intruders. And now the four (after several dances, which had been made the opportunity by the impetuous Reynolds for sundry barely imperceptible hand-pressures, that brought the conscious blood to the cheek of the susceptible Alice) were seated together. Edgar and Edith had engaged in the dances as thoroughly, though in a more dignified way, as the other couple. They were cool, dignified, and witty in their brief talks during the pauses; but as they skimmed over the floor, each secretly acknowledged to a willingness to go hand in hand through life with "that other."

"You look very warm, Mr. Reynolds," said Edith, with a faint touch of sarcasm.

"I feel warm," replied the innocuous Herman.

"I judged so," returned Edith, with a deeper sarcasm in her voice; "from the sympathetic appearance of Alice's face."

At this Alice and Herman both looked particularly warm, and the former said, spicily, "I should suppose, Edith, that a girl who simply walks through the figures as you do, would be able to keep quite cool, and have abundant opportunity to study her neighbors. I like to get right down to business, as the men say, when I do anything."

"Yes," continued the tormenting Edith, in the same tone. "But I usually attend to one line of business at a time;" and she began with an innocent air to hum a little ditty.

"Really," said Edgar; "I am sure Miss Edith dances beautifully. I overheard several remarks indicative of admiration. You certainly don't expect to see the 'chandelier-kicking' ballét-girl style here?"

"Certainly not," retorted Alice; "Edith is a regular classic dancer—could be a star in a Greek comedy. By the way, as you swept by in that elevated manner, I heard some one say: 'What a well-matched couple!'"

Now came Edgar's and Edith's time to look profoundly conscious. Thus the badinage went on between the dancers, until the "party" separated.

SAMUEL LEAVITT.

(*To be continued.*)

NEED OF THE BUSINESS MAN.—There are men who arise early on Monday morning, before the rest of the family are awake,

take their breakfast, go to the office or counting-room, remain until a late hour in the evening, go home, read the paper, and go to bed. Children, and perhaps wife, have retired before such a man returns to his home. This course is pursued every day except the Sabbath, on which the faculties and bodies having been completely exhausted, the man shuts himself up from his prattling little ones, and the music of their sweet voices and the sunshine of their smiles are entirely lost to him. Such a man was the father of the boy who, when he happened accidentally to meet his father one morning at the breakfast-table, and was jestingly introduced to him by the mother, said: "I am glad to meet you, father—I have frequently heard mother speak of you." Such a continued tension of the mental faculties—such a ceaseless strain upon the brain, must sooner or later end in serious disaster to the nervous system, and in death. Men play too little—laugh too little—and sleep too little. They work too much and think too much. Play is thought by many to be below their dignity. Such an idea is a capital one for the doctors. A good romp with the children over the snow, or on the green, and a hearty laugh, will do more to preserve health and enliven the spirits, than a whole barrel of medicine can do.—*Exchange.*

TROPICAL TREES.

AMONG the trees of the tropics are found some of the most interesting productions of nature. Possessing the vigorous life which is never checked by frost, they support upon their stems and branches whole colonies of parasites, which draw their entire sustenance from their superabundant vitality, and illuminate the deep shadows of the forest with airy gardens, which bloom only for the birds that haunt their blossoms.

It would be difficult to assign to either hemisphere a preëminent claim to the possession of the most valuable trees, but we are inclined to believe that an accurate census of values would award it to the Eastern.

Civilization has so accustomed the world to the possession of the luxuries of all climates, and commercial enterprise has placed them within such easy reach, that we are apt to forget our indebtedness. The choicest fruits, the richest woods, the most brilliant dyes, in a word, the rarest vegetable luxuries of the world are afforded by the trees of tropic lands.

It is a striking fact, too, that here the greatest extremes are found of that caprice with which nature seems to delight occasionally to surprise mankind. In nothing is this fact more conspicuous than in the bloom of tropical trees. The dwellers in the temperate regions see in the blossoms of trees only the ephemeral flush of beauty marking the advent of spring. Not so is it in southern climes. The blossoms of the trees are often larger and more splendid than those of the garden—often ten and twelve inches in length. Those of *aristolochia cordifolia* are four feet in circumference. It is a pretty coquetry of the Signoras of the West Indies to use the large ivory petals of the magnolia grandiflora as note paper for *billet-doux*. The writing is done with the point of a needle, and becomes dark almost instantaneously. Under a more northern sky a lover would hardly find space for a "sonnet to his mistress' eyebrow" on the petals of any sylvan blossom within reach.

The engraving gives a sketch of one of those venerable, majestic monarchs of the forest, which have commanded the admiration of all generations, the banyan. It is the patriarch of trees. It is native to India, and is generally familiar to readers of eastern travel. It grows at great heights, from five to eight thousand feet above the level of the sea, and shuns the hot plains. Each tree is in itself a grove. The branches, which descend to the ground, are sometimes ten feet in circumference, and each, upon touching the earth, takes root and becomes a tree. Fabulous stories are

told of the age to which it attains, some writers counting it by centuries; but it is undoubtedly very great. Dr. King tells of one which covered an area of ground 800 feet in circumference, the girth of the trunk being 51 feet. He believed it to be about 100 years old.

Among trees, the banyan is unique in the manner of its growth, and its great beauty and pretensions to antiquity make it interesting. It is highly esteemed by the natives, who sometimes worship beneath its shade.

Fig. 1.—The Banyan Tree.

> "Branching so broad along, that in the ground
> The bending twigs take root, and daughters grow
> About the mother tree, a pillared shade,
> High overarched, with echoing walks between."

Its praise has been sounded by all travelers as an object of curiosity, but its uses are not so well known. Its fruit does not exceed the size of a hazel-nut, but it yields the gum which forms the basis of the wonderful Indian lacquer which has never been equalled in brilliancy of polish. When it is remembered what exquisite things are produced by the use of this varnish, it will be seen of what value the tree must be in a commercial point of view. It is the abode of innumerable parasitic plants which fix themselves upon its limbs, and grow, bloom, and die undisturbed for a century.

We have mentioned the banyan first because of its singularity, but it ranks far below many others in practical value, with the uses of which we are all familiar. Among the richest and most valuable woods used in the construction and decoration of our houses, are the mahogany, ebony, lignumvitæ, rosewood, and camphor trees; besides there are very many others, less known, but exquisitely beautiful—such as the sandal, satin, zebra, and

coramandel woods, all used for articles of elegance.

The great cost of these woods is accounted for not only by their rarity, but by the great labor necessary to procure them from their native forest. Not only is the ground closely covered with giant trees, but every bough and twig supports some graceful orchid, throwing up long plumes of brilliant color into the light, or drooping in elegant clusters from the lower branches, while the strong, fibrous trailers of innumerable rope-like vines stretch from branch to branch, loop and knot them together in an inextricable tangle, which can only be penetrated with the aid of the woodman's axe.

The native manner of obtaining the heavier woods—such as mahogany—is sufficiently slow and laborious. The desirable trees being first selected by competent judges, a clearing is made around each tree, and then, during the dry season, it is cut down and the logs squared upon the spot. When ready for transportation, they are marked with the owner's name, drawn by ox teams to the nearest river, and thrown in—the workmen embarking in light canoes and following them down the stream, and guiding them to the nearest port, where they are sawed into boards for exportation

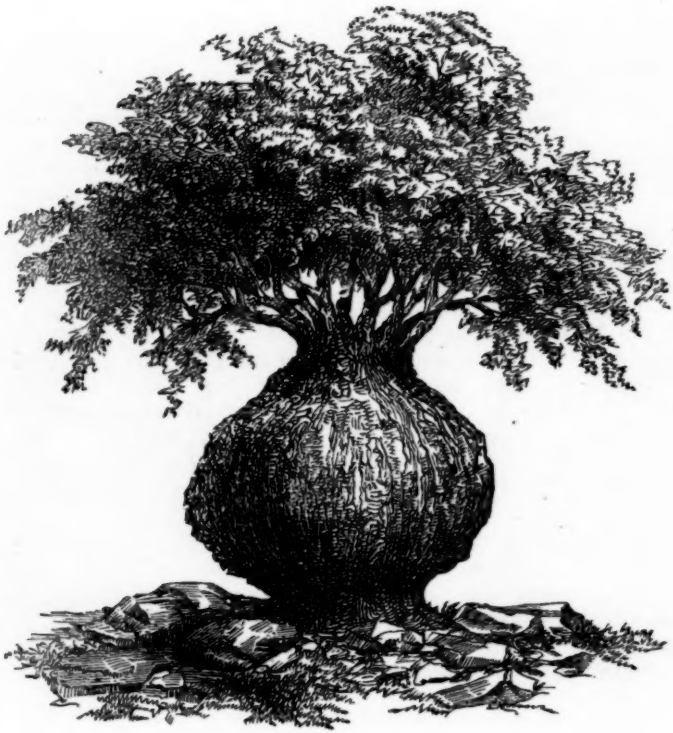


Fig. 2.—The Bottle Tree of Australia.

Australia, it has been remarked, boasts the most grotesque forest creations upon the globe; and not content with presenting to our astonished eyes a bird without wings and covered with hairs, she displays, also a "bottle-tree." The shape of the trunk

resembles an Italian oil-flask. When the ground is smooth around its base, the bulb-like swelling occurs just above it; but where the tree grows among rocks, it is found about midway between the ground and the branches. The appearance presented at a little distance is that of a large vase filled with green branches.

Not less remarkable is the cow-tree of South America, whose formidable botanical name we will not quote, which yields a sap so closely resembling milk that it is largely used by the natives as a substitute for it. It can hardly be expected of human nature that a people should be very industrious where trees yield milk and bread, ready-made. The bread-fruit is too well known to need description here. It grows in great abundance, and greatly exceeds the cocoanut in size.

The cocoanut palm, which affords what, in its freshness, is esteemed nectar, is found in many lands; but if we touch upon the virtues of the family of palms, we shall never have done. One might suppose its beauty a sufficient excuse for being, since its feathery plumes redeem even the desolation of the desert; but its use to man is inestimable. It roofs, and shades, and carpets his dwelling; affords wearing apparel, furniture, useful domestic utensils, ropes, cordage, fans, food, drink, and perfume. An enumeration of its gifts would fill a volume.

But not only are we indebted to the tropical sylva for our valuable woods and things of luxury, but for so large a proportion of the articles in every-day use, that we have need sometimes to recapitulate to discover how large the proportion is. Civilized life would have to be revolutionized if india-rubber were suddenly abstracted from the thousand and one uses to which it is daily applied. How could the army and navy do without it? We should have to reconstruct our railroads. The factories of the world would stand still if rubber bands and springs were withdrawn. Ladies' dresses would have to be remodeled, to say nothing of the multiform uses of rubber in science and in the domestic realm.

The tables of the civilized world are spread every day with the produce of the trees of the tropics. Tea, coffee, chocolate, spice, dates, tamarinds, bananas, almonds, cocoanuts, and the countless lesser accessories of a luxurious table, grow within those charmed lines. Indeed, if all the trees between the circles of Capricorn and Cancer were burned down, the world would be at a loss for a large part of its daily food.

A WASP-WATCHMAN.

THE clever, faithful little scamp! I watched him by the hour for the cunning alertness and untiring readiness for every emergency, which he displayed. It was on a warm, summer afternoon in the country, that I took my rocking-chair and my book to sit on a veranda, upon which my room opened. Insects always seem to me like Lilliputian races of people, and however interesting my book, *will* withdraw my attention from it.

My chair had been accidentally placed near this sentinel's beat, and annoyed him considerably. He was parading about a hole in the floor, to and from which many wasps were busily passing back and forth, and in which they must have had a nest. He ordered me off by whizzing around me, but after I had sat very still for some time, he became reconciled; and then a crimson table-cover, that had been thrown over the banister to air, and which flapped in the wind near his nose, excited him. He made all sorts of gyrations toward it, I suppose by way of investigating what manner of intruder it was, and also to see if he could frighten it away. Finding that it proceeded monotonously and was, therefore, not alive, he let it alone, but it was laughable to see him rear up on his hind-legs and survey it again when any puff sent it farther than usual.

Nothing seemed to escape his attention. If any one passed along the veranda near

him, he sailed after him and returned. But I observed that, wasp as he was, he could give a lesson in patience with small creatures. A miserable little ant came skurrying along, and all unconsciously ventured too near that sacred entrance. Now suppose it had been a pig or dog intruding on human premises? Ten to one, it would have received a kick or blow, but my little wasp, ill-natured as he is reputed to be, merely "slipped up on it," and buzzed loudly and threw his legs and wings up, making a deal of "fuss and feathers," to frighten her, *but not touching her*. Anty didn't believe him, and turned her little head and started around him. Three times he made this startling demonstration before her ere she turned and fled. Then he stood and watched until she was out of the way. I actually saw him scare away two or three ants without harming them.

I procured a tick, a pest which is very plentiful in the woods of Missouri, as people there "know to their sorrow." Its habit is to insert its tiny, shovel-like head into your flesh and suck your blood until, from a flat, little insect, it becomes as round and large as a small marble. A stranger, at first, imagines it a mole on his skin, but soon becomes alarmed at its resemblance to a wen or small cancer, when confidentially disclosing the fact to a native, he gives that individual infinite merriment, and is informed that it is "*only a tick.*" The one which I made a victim of was in his natural collapsed state. As I did not wish to murder him, I delegated the business to the wasp. I threw it very near the entrance of his nest. He sprang at it in the usual way to frighten it, and the tick traveled as fast as he could go. I replaced him again and again until the sentinel, outdone with his persistence, picked him up in his jaws, and, by a dexterous movement, threw him about a foot, an astonishing distance for so small a watchman—perhaps the breeze assisted to carry it. As I didn't wish to arouse his majesty too much, I threw the tick away.

It seemed to be a part of his duty to challenge, and also to escort a short distance, every wasp that came to or went from the nest, which he did with a social, hilarious buzz, but not always gently. At times he would fly up and meet them about half a yard from the entrance, knock against, jostle, and shake them as if to make them drop their burthens, which they would not do with his most strenuous efforts, although his apparent roughness seemed to be given and received in good humor as a part of the ceremonies. They were carrying spiders to put into the germ-cells. My good opinion of the little fellow received a temporary check; for I thought I detected him in high way robbery of his fellows. Suddenly, he brought a wasp down from his flight; had a struggle with it; held it down and ate the food it carried in its mouth. Others he caught and drank up a drop of water or honey, which they were conveying in their probosces. After seeing him serve several in this manner, I perceived it was his way of getting his food and drink, for the poor little watchman could not leave his beat to find his own food, and of course it was their duty to feed a faithful servant. They, in their gentle submission to the seeming robbery, after the first vain struggle was over, displayed a human sentiment—"The laborer is worthy of his hire." A faithful chronicler is bound to admit, however, that the trying to dodge the duty looked slightly human too. Knowing a wasp's quick resentment against interference from meddlers it was highly entertaining to see them rolled about and pulled around at his pleasure, while he was feeding, without any attempt at biting or stinging him. When they could get away from him in the beginning of the attempt, they darted into the entrance with a huzzaing buzz. He rarely followed them in, but waited and seized the next comer.

To me, their sentinel seemed an expensive one, for he was very voracious, considering his slight, airy form. I observed afterward, that evening after evening he (whether it were the same one always I can not tell) kept up his patrol until dark before he retired for the night. Altogether, the cheerful, contented,, merry, social air of the inhabitants of that wasp-den was a wonder to behold, considering their well-established character among us for fierceness.

KATE KAVANAGH.

A NEW KITCHEN CONVENIENCE.

OUR lady readers are interested, of course, in everything new which promotes the economy of home life, particularly in that most important department which supplies the food. A recently patented kitchen safe, a description of which we find in the San Francisco *Mining and Scientific Press*, strikes us as an exceedingly convenient thing for the housekeeper, and we have taken the liberty to place it, so far as type and engraving will permit, in our pages.

A KITCHEN SAFE.

As the reader will see, the article is furnished with draws and shelves, and accommodations for the implements and utensils most commonly required for preparing food.

A represents a chest or cabinet having a hinged cover, *B*. The cover is constructed of a single panel, and this panel is depressed on the inside of the lid so as to provide a recess in which the head-board, *C*, will lie when not in use. A button on each side of the recess fastens the board in place. An upright partition, *D*, separates off one end of the box, so as to form the flour bin *E*. A rail or ledge, *f*, is secured to the end of the chest, inside of this bin, while a similar rail or ledge is secured opposite it to the upper edge of the partition. The dough tray, *G*, is provided with a shoulder or ledge, *n*, along the upper outside edge of its opposite sides, so that when the tray is set into the bin its ledges, *h*, will rest upon the rails or ledges, *f*. The dough box is shallow, so that it only projects downward a short distance into the bin, and it can be slid back or forth on the rails or ledges, *f*.

When the dough box is pushed back

against the rear side of the chest, sufficient space is left in front of it to admit the hand or arm of a person into the flour bin below, and this space, when it is not required to be open, is closed with a board, *H*, which prevents dust from entering the bin.

Along the rear side of the chest, between the flour bin and the opposite side, are two or more small bins, *I, I, I*, each of which is provided with an independent lid or cover, *J*, and which are intended to hold salt, soda, or other things used in cooking. These bins need not extend down to the bottom of the chest. Between them and the front of the chest, and somewhat below the upper edge of the bins, is a bottom, *K*, which forms a shallow table for the cook to work upon.

L, L, L, are a series of draws, which are placed one above the other in the middle of the chest, and are useful for containing knives and forks and other small table furniture. *M* is a cupboard door that opens to a series of shelves. The corner shelves and drawers extend entirely back to the rear end. These shelves are for table cloths, napkins, and other kitchen and dining-room cloths. This convenient and ornamental kitchen cabinet is the invention of Mr. George McIntyre, of San Francisco.

THE THREE PRAYERS.

A MAN went a journey his daughters to see,
Both wedded as happy as daughters could be;
One married a potter, thrifty and kind;
The other a gardener, just to her mind.

And first to the gardener's wife, visit he made,
"How are you, Matilda? How are you?" he said.
"All very well, father, we can not complain,
But I wish we could have just two days of rain;
The roses are drying, the trees yellow grown,
Potatoes all dying for water alone."

He next made the potter's wife fatherly call;
"How are you, Elizabeth? How are you, all?"
"I was just praying, father, for two days of sun,
To bake all our tiles, then our work would be done."

"Two days!" said the father. "I ride o'er the plain,
And can not endure the hot sun or rain;
The best that I wish, the best thing for me,
Is two days the weather all cloudy may be.

"My limbs are rheumatic, I can't bear the rain,
My eyes are so weak the sun gives them pain;
I wanted my daughters to both pray for me,
On overcast days my journey might be;
If our prayers can not join all fervent in one,
We'll all say together, Let His will be done."

LYDIA M. MILLARD.

TAKING ADVICE.

SO many dismal tales are related of the dreadful catastrophes resulting from having a mind of your own, or daring to follow out your own conclusions, by those who would fain have us see God's will through their spectacles, that the temptation is unavoidable to us to feel that for all practical purposes automata might be substituted beneficially for the bulk of mankind, or slavery again be established on some slightly modified plan. Are not our Sunday-school libraries overflowing with books of advice? Do not admonitory treatises confront us in every public library? Is it possible to examine any collection of books without being furnished with a ready-made directory for life, and tormented with a thousand contradictory hints and axioms regarding the whole paraphernalia of human existence? But were these silent advisers all, they might be endured or avoided at will; but the "living epistles" are not to be so easily evaded, since they are as numerous and annoying as the locusts of Egypt. There is your pompous, self-satisfied adviser, who is never so happy as when with a band of kindred spirits around him he is oracularly giving his opinions, and which, on many occasions, he does with a charming unconsciousness of its unfitness.

Then there is your morbid individual, with whom giving advice has become a chronic mania, and who delivers it with the same conscientiousness which a physician

is supposed to exercise in prescribing medicine. He feels, in fact, that he is fulfilling his destiny in so doing. Next comes the sinister, artful adviser, who with his plausible speeches would fain entrap the unsuspecting; and here remembering the old fable of the spider and the fly, we pass him with a shudder. But most contemptible, perhaps, of all is that "dear, dear friend" of yours whose interest in your welfare is unbounded. She would not for the world give you a moment's pain or wound your feelings. Oh, no! but yet she is literally dying to give vent to her petty spite and envy, and to let you know at the same time that she has remarked all your pet foibles—

> "All your faults observed,
> Put in a note-book;
> Learned and conned by rote,"

and estimated your virtues, if indeed she allows you any, at a very low rate. To quarrel with you would be unchristian-like; to speak of you disparagingly to others, slander; and then it might neither reach nor harm you, and so she advises you—which is eminently proper, friendly, and "so kind of her too"—"and all for your good, you know." And so only the gleam of the eye or expression of the face giving you the key to the real purport of the infliction, you must writhe under it or endure all with the equanimity of a stoic. But only venture to retaliate, and "turn the tables," and then the appearance of Medusa may be imagined, or Xantippe known to have some modern rival.

Then follows your sincere, but ignorant or short-sighted, well-wisher, who, comprehending neither your motives nor your aims, wearies you, and himself, too, by endless dissertations. Taking people's advice means exchanging our own individuality for that of another, and in general suits as well as borrowed clothes might be expected to. Notwithstanding all the clamor as to its advisability, a retrospective glance at history does not show that taking advice has always been attended with the happiest results. It certainly would have been better for our first parents had Eve rejected the advice of a nameless individual, or Adam not hearkened to the voice of his wife; and we, their remote descendants, instead of laboring in our respective spheres, might have been luxuriating in the Garden of Eden—woman's rights unquestioned and the Darwinian theory never advanced. Following the advice of his counsellors cost a Jewish king his throne; and glancing at English history, we find that Lady Jane Grey paid with her life the penalty of acting on the advice of her ambitious father-in-law and aspiring to the throne. If Luther had proved amenable to his father confessor, what would have been the condition of the Christian world at the present epoch? If Columbus had taken advice and given up his expedition, when would America have been added to the world's history? And if her sons had listened obediently to the advice of King George, would American enterprise and progress ever have been noised abroad throughout the civilized world? Or would democratic government have stood the test of practical experience? or the Centennial Exhibition ever been dreamed of? Serious reflection on the many whose "names will never die," inclines us to believe that, had they listened to the advice and solicitations of others in the early part of their career, they would have lived but fettered and comparatively useless lives; would have added another proof to the firm belief that no outside influence should be allowed to shape individual destiny, even though it be in an humble and limited sphere. We should be sincerely grateful for the wise advice of faithful friends; but let us take counsel mainly of "God and our own hearts."

C. I. ANDERSON.

ACCORDING to the Adams, Mass., *Transcript* there is now living in the town of Washington, in this county, a Frenchman named Shepard, who is one hundred and nineteen years of age. He still walks without a cane, and has not given up work. He has several sons and daughters who have large families, and his great-great-grandchildren number fifty. A daughter, seventy-five years of age, has just come on from Michigan to take him home with her. Mr. Shepard served in the old French war.

THE PARIA—A GLEANING.

ANCIENT India, while recognizing the right of society to punish its members for faults and crimes committed against it, had a somewhat different idea of the manner of applying such right from that entertained by modern nations. According to their belief, certain essential faculties of man could not be touched without dishonoring the divine work; in application of which idea they regulated all repression by a penalty. Deeming themselves powerless to control man's moral liberty—that is, his faculty of thought—they forbade restriction of his personal liberty as alike the work of God; *wherefore* prisons were unknown among them. Their penalties were death, degradation from a superior to an inferior caste, entire rejection from all caste, the bastonade and tortures, purification and sacrifices, fines. Capital punishment was excessively rare, and inflicted solely for crimes affecting the very essence of their political institutions; nor was death, nor indeed the most fearful tortures, dreaded half so much as complete exclusion from all caste. This was, indeed, incalculably more horrible than death, involving as it did the loss of family, friends, property, all civil and political rights, not only in the victim's own person, but all his descendants born after his condemnation. Marked with this brand of dishonor, they were abandoned by father and mother, sister, brother, wife, and friend, and might expect neither pity nor regard. Excluded from all social ties—forbidden intermarriage with those who had never lost caste, neither could they eat with, study with, nor associate with their former friends in any particular. His casting out was either religious or political, and might be pronounced by prince or priest; and as the guilty appeared before the civil tribunal to avow his crime, so he was required to publicly confess his transgression to the priest. From this penal system, this entire rejection from all caste, springs that unhappy and disgraced being—the Paria! To make his dishonor indelible, the Paria was branded with a red-hot iron on the brow or shoulder; water, fire, and rice were to be refused him on pain of degradation, by all men of caste. At the present day in India if a Paria meet a man of caste he must kneel, nor dare to look in his face; if he be perishing for food or fire, he must seek or steal it; no house will voluntarily open to him, no hand offer him rice or a brand from the hearth. Egypt acquired from India the gist of its religion as well as its social institutions and laws. These produced on the Nile, as on the Ganges, a class of Parias. Such were the enslaved Hebrew people, hewers of wood and drawers of water; *unclean* to the haughty castes, that would brook no association save as masters with the outcasts of Goshen. These Parias of the land of the Pyramids, Moses led forth from the most woful oppression to the freedom and power of the Promised Land. Greece, though largely influenced by the love, language, and philosophy of the Indian Brahmins, was too free of thought to incorporate into its laws the living death of the Paria in its complete horror. The democratic Athenians, originators of the right of suffrage, might, however, ostracize a political or social offender, which they did by writing the name of him whom they wished *banished* from the country on oyster-shells. Autocratic Rome, however, ordained the Hindoo *penalty* in her written law, under the name of *Capitis minutio*, deprivation of civil rights; rejuvenated in France as the *mort civile* of the Code Napoleon, the civil death, whose victims had no longer wife or children, only the agonizing tenure by which they held on to life in such dungeons as Chateau D'If. It is only so late as 1853 that this relic of ancient cruelty was erased from European codes. We find it one of the strongest weapons of authority in the hands of Papal Rome in the middle ages. In those days when the Vatican thundered forth a sentence of excommunication, emperors and kings trembled.

In 985, Edwy, a Saxon monarch of England, was excommunicated for having married his cousin, Elgiva, who was torn from his very arms and *branded* in the face with red-hot irons by the tools of the Arch-

bishop of Canterbury. Forsaken by all men, the dethroned king died of a broken heart. Henry IV. of Germany, under the same sentence, only obtained absolution after standing with his bare feet in the snow, three days in the month of January, begging admittance to the presence of Gregory VII., Pope of Rome.

Something of the spirit which made the Paria possible, exists in free America to-day. We know of people losing caste; we hear of exclusive circles. Let us beware of a cruel custom that, in other lands and over the seas, has in time past, enthralled nations, and been able to reduce the most powerful to a downfall in the dust; that may, if allowed to get a foothold, shake our Republic to its core, or even establish a despotism on its ruins.

V. DURANT COVINGTON.

WHAT IS HIS CREED?

He left a load of anthracite
  In front of a poor widow's door,
When the deep snow, frozen and white,
  Wrapped street and square, mountain and moor.
    That was his deed,
      He did it well;
    "What was his creed?"
      I can not tell.

His charity was like the snow—
  Soft, white, and silent in its fall;
Not like the noisy winds that blow
  From shivering trees the leaves;
    For flowers and weed
      Drooping below.
    "What was his creed?"
      The poor may know.

He had great faith in loaves of bread
  For hungry people, young and old;
And hope inspired kind words, he said,
  To those he sheltered from the cold.
    For we must feed,
      As well as pray.
    "What was his creed?"
      I can not say.

He put his trust in Heaven, and he
  Worked well with hand and heart and head;
And what he gave in charity
  Sweetened his sleep and daily bread;
    Let us take heed,
      For life is brief.
    "What was his creed?"
      "What his belief?"

THE FIRST DOLLAR.

THE following story is true, and must please as well as counsel our young readers:

Many years ago, a gentleman from the town of Methuen, Mass., while on a visit to a prominent merchant in Boston, was asked by the merchant if he knew a boy in Methuen that he could recommend to work in his store. At first the merchant could think of no one, for he knew none but a faithful, honest boy would suit the thrifty merchant. At length, however, he called to mind a boy of excellent character in his neighborhood, but feared he would hardly do, as his parents were very poor, and he had no education or other advantages to fit him for such a position.

But the description of the boy's habits pleased the merchant so much that he handed the gentleman a dollar with which to pay the boy's fare to Boston by stage, and requested him to send the lad to the city, and if, on a personal interview, he should not prove satisfactory, he would pay his fare back home again. The gentleman, as requested, visited the boy's parents, and stating the merchant's proposal, advised them to send the boy for trial. He then gave him the dollar which was to pay his fare to Boston, and departed.

Under similar circumstances, ninety-nine out of every hundred boys would have said, "Now for a good time! I never saw a city, and never rode in the stage. Oh, there will be so much to see, and it will be such a long ride, and here is money sent to pay my fare!" Not so with this boy. Putting the money carefully in his pocket, he said to himself—

"This is the first dollar I ever had. How I wish I could save it! It is only twenty-five miles to Boston. I can walk there in a day. I'll do it and save my dollar."

His mother patched up his clothes as well

as she could, and early next morning the little fellow parted with his parents at the door of their humble home, and set out on his long tramp to the great city, which he reached, tired and dusty, a little before sunset. He found the merchant, who sternly asked—

"Where have you been all day? The stage came in hours ago!"

The boy thought he had displeased the merchant at the outset, and with downcast eyes and tremulous voice, he answered—

"I did not come on the stage, sir."

"Did not come on the stage! What do you mean? Didn't I send you money to pay your fare?"

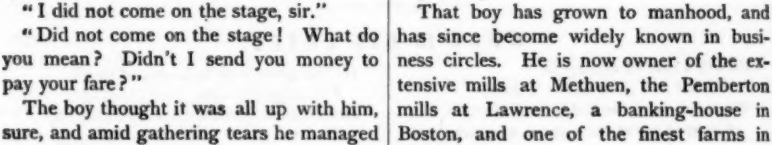
The boy thought it was all up with him, sure, and amid gathering tears he managed to reply—

"I am very sorry, sir! I did not mean to offend you. I thought I would walk and save the dollar. I never had one before."

Placing his hand gently upon the boy's head, the merchant replied, "My little man, you did exactly right. Come home with me and get some supper."

Then turning to a bystander, he remarked, "I wouldn't take a thousand dollars for this boy to-day."

That boy has grown to manhood, and has since become widely known in business circles. He is now owner of the extensive mills at Methuen, the Pemberton mills at Lawrence, a banking-house in Boston, and one of the finest farms in Massachusetts.



True philosophy is a revelation of the Divine will manifested in creation; it harmonizes with all truth, and can not with impunity be neglected.

EDUCATION AT THE CENTENNIAL.

[This interesting sketch of the educational department of the late Exhibition was prepared shortly before its close, but lack of space has prevented the publication until now].

THE babies' school, the Kindergarten, first claims attention. The one in actual operation on the grounds is thronged whenever it is open, showing that there is great interest felt by the public in this method of teaching. Every home should be a Kindergarten, with the house-mother as instructress. Let the public Kindergarten be reserved for orphans. The energetic and devoted lady who presides over the pleasant buildings back of Memorial Hall, seems to realize this. She exhibits some most remarkable work done by tiny fingers, and teaches mothers how to use the materials she sells, while her enthusiasm inspires them with a desire to learn the system.

A little beyond the Kindergarten is the Pennsylvania school-building. This State is the only one which has the honor of possessing an entire structure devoted to education. The exhibits are classified by the city or county to which they belong. For contrast, one section is devoted to the schoolroom of fifty years ago. There stands the high box-stove, so destructive to forests when they were a burden; so convenient for telling fortunes by popping apple-seeds and roasting chestnuts; so noisy and sociable on a cold winter morning when the snapping of its great logs mingled with many voices. There is the master kindling the fire from the coals he buried last night while the tallest and handsomest girl in school was waiting for extra help in arithmetic. The wall is spotted by many a spiteful dash of ink. A gourd which, at stated intervals, was passed to the Sahara-like group occupying the seats, hangs by the old water-bucket. The old desk, carved by errant jack-knives; the right-angled wooden bench; the master's well-worn hat and long-tailed

coat still retaining an air of dignity; the bunch of goose-quill pens sharpened, ready for the morning — all are there. Nor is the "ancient thrashing-machine" forgotten. Neatly tied up, it hangs on the wall awaiting its motive power, an exasperated will.

Near the ancient school-house is a desk, composed of all the varieties of American wood, and believed to be the finest piece of wood mosaic in the country. It was made thirty years ago, by Mr. Sidell, who occupied seven years in its construction. The Soldiers' Orphans' schools, of which Pennsylvania may justly be proud, and the colored schools hold an honorable place. Some of the best work comes from the Institute for the Blind. A complete piano action, with its intricate and delicate arrangement of levers, is presented by one of the boys from this school. Mattresses, brushes, cushions, and sewing-machine work show the ability of these unfortunates to support themselves. Their letter-writer consists of wooden types, in which pin-points are inserted, to form the alphabet. These letters are pricked one by one on paper by the writer as easily as a compositor sets type. The blind prefer this method to the old one, because by it they can read their own writing without the offices of a third person. The school of Elocution has a small, but effective display of charts and other apparatus. One of the most interesting exhibits, because it reaches a class generally supposed to be beyond the reach of educational effort, is that of the school for the feeble-minded, located near Media, Pa. Most wonderful results have been attained among these beings, often, apparently, not more than half human. One pupil, whose hearing is very imperfect, has constructed a chart representing by lines, in a very ingenious manner, the positions of the dumb-bells in his gymnastic exercises, in order that vision instead of sound might enable him to keep time with his classmates. Astronomical apparatus, charts, dissected iron maps in relief, every conceivable kind of school-furniture is exhibited in this building. A very convenient instrument for manufacturing charts is Holman's audascript pen. By means of a broad nib, with several slits, a line can be drawn of any required width.

The Freedmen's Department, in a gallery of the Main Building, exhibits a set of compositions on the subject, "How I got my Education," which would make an interesting and instructive volume. Time permitted the reading of only a few, but these were filled with accounts of longing and pitiful toil to obtain the learning cruelly withheld from them for so many generations.

Hampton Institute sends specimens of the various branches of its eclectic work, and shows a photograph of the students arranged in squads, blacksmiths, bakers, carpenters, farmers, etc., equipped for the day's work. The colored schools furnish Kindergarten work and clay modeling.

Iowa exhibits some beautiful crayon sketches, and among many other things, a large number of written answers to the apparently useless question, "What would you do if you should lose your right eye?" One of the most original replies is: "I should be very sorry." A good sample of the original problems is, "The City Hall is south of the Post-office. Can you go there without facing south at any point?"

Maine has fine designs for oil-cloths and tiles.

New Jersey has an extremely interesting collection of its cryptogams, insects, minerals, ethnology, etc., which would make a profitable study for many weeks.

Yale College presents a fair-sized library, written entirely by members of its faculty and student rolls. This, surely, speaks volumes for its culture. Connecticut shows first-rate work, done by Chinese boys who have been only two or three years in this country. They seem to possess distinguished talent for drawing.

Michigan exhibits a style of desk which may be changed from horizontal to upright in a moment, to prevent scholars from bending over their work. There is also a fine collection of the birds and shells of this State, and the pharmaceutical preparations required for graduation in the school of pharmacy.

New Hampshire displays a fine relief map of the White Mountains, drawn by Colonel

Hitchcock, the State Geologist, on the scale of an inch to a mile, horizontally, and an inch to 1,000 feet on a vertical elevation. Dartmouth College has much of the students' work and many views and portraits.

Maryland produces a map, showing the relative number of white and colored pupils and schools. There are 1,524 white schools with 120,523 pupils, and 322 colored with 142,992. Equal rights have not yet attained full sway in this State.

The New York Institute for the Blind exhibits raised-letter printing, and offers to send its books free to contributing States. A noble exercise of charity consists in furnishing literature for the blind. Their books have a comparatively small sale, and are so expensive that few are printed. As the business can never pay for itself, the only way to give a library to the blind is by donations.

The Ohio Department contains some of the finest specimens of drawing, among which the most conspicuous are a Laocoon group in crayon, and a monochromatic four or five feet in length, none of whose shading is many degrees removed from black. It is a well-executed picture, abounding in life. The Griffin box and pyramid in this section, though little over a foot long, contains 8,000 varieties of wood. The penmanship of the Ohio schools is exceptionally fine.

Massachusetts is surpassed by no State in her educational exhibit. The drawings and designs are almost beyond criticism. All of the work has utility for its ultimate aim. Not only the designs of the scholars are shown, but the manufactures in which they have been used. The pupils of Worcester have constructed their own apparatus for study. The neatness of the written exercises is wonderful. It must have required extreme diligence to overcome the natural carelessness of youthful humanity. In no department is the work of the evening schools inferior to that of the day-schools. Several large scrap-books are filled with neatly-folded sewing. No other State or country exhibits that branch of education. A handkerchief, beautifully embroidered by the unfortunate Laura Bridgman, is an object of universal interest. This, and the work of the feeble-minded children of Pennsylvania make the almost infinite power of education on the human mind a reality. The Boston Library displays its method of registering, which works so perfectly that out of an annual issue of 1,000,000 volumes, only about 100 are lost. The oil paintings and plaster models and busts are of high order. The Hoosac Tunnel excavations are represented so plainly as to be interesting and intelligible to the ordinary student. Time forbids the detail of several other interesting State exhibits.

No country sends a more complete detail of the working machinery of a school than Canada. The charts are of a superior order. Many of them contain pictures of plants and animals, whose products, useful to man, are glued to the margin and a description is appended below. No child could forget a lesson so clear and attractive. These charts are so suspended that they can be turned in view of the pupils like the leaves of a book. In mechanics, a large quantity of wooden illustrative apparatus is exhibited. There are also a large number of fine models of educational buildings and grounds. The government of Canada offers to schools a selected list of books at half price for prizes, or similar purposes.

Russia is not behind in her educational exhibit. Sweden gives in the Main Building a small school-room, with writing-books lying on the desks so naturally that the little fur-dressed children seem about to take their places there. The Swedish schoolhouse back of Memorial Hall is completely furnished with apparatus. Its thermometer is several feet long, sufficient to permit the mercury to perform its wildest freaks. The teacher in Sweden resides in the school building, the rent forming part of his small salary. The Government gives to every child all the education he may desire.

The largest and handsomest engineering models of the Exposition are to be found in the French Building. There are harbors, barrages, swing-bridges, light-houses, sailors' safety apparatus, and many other triumphs of the art. Water is represented by large mirrors, and French taste is everywhere displayed.

The educational exhibit of Japan is sur-

prising. Their botanical classification is founded on prominent American authorities. In Tokio is a foreign language-school graded so as to admit of graduation. A pupil supported here costs the Government 5,900 yen yearly. This department contains a map of the Japanese school districts with models of school-houses. Most of the books are put up in pasteboard portfolios. Some of them are stitched, so as to open like the finest work of American binderies. The reports bear notes showing the little Japanese to be exceedingly like their American compeers. One, for example, is noticed as "wasting time and money," another is said to be "industrious, but slow," etc. The compositions are very creditable, especially some in the French language, after only two years' study.

Time forbids even an enumeration of many countries represented in this department of the Great Exposition. In the States only the most prominent and distinctive objects have been named. All have Kindergarten work, written exercises, and free-hand drawing. The galleries of the Main Building show the beginning; the floor of the same the completed work. From the chemical exercises to the wonderful crystallizations and compounds; from the music charts to the concert; from the drawings to the wonderful and elaborate designs wrought in tapestry, wood, or metal, a glance would pass, but what a revelation of the development of mental power. A fine feature of this educational Exhibition is the harmonious nurture of all the mental faculties. Object-lessons, language, mathematics, music, and drawing are so combined that no individual need be a novice in any branch. From the improvement in education during the past few years, a very encouraging prospect for the future is afforded; and, unless the anxiety for advancement becomes so strong that methods of showy and superficial training obtain too extended an introduction, we shall reap rich fruitage from our liberal system of juvenile education.

TWO WORLDS—THE OLD AND THE NEW.

From England comes a greeting to the "Young Titan" of the Western world, which embodies a grave philosophy quite out of keeping, many would think, with the spirit proper of the organ which gives it utterance —*Punch*. There's wit in the lines, but of the sort which sets men to thinking; in fine, it is a serious wit which the profound diplomats of Europe might ponder healthfully.]

Peace, in her palace over the Atlantic,
From the New World deals her awards around,
While war's leashed hounds, a-strain, for bloodshed frantic,
In our Old World can scarce be held in bound.

Lo! here, each nation armed against its neighbor;
Cross in the face of Crescent reared for fight:
There to the blessed battle-fields of labor
United States that all the world invite.

For a far different shock from the impingings
Of broadsides 'twixt a "Chesapeake" and "Shannon."
The strife of Corliss and his monster engines,
With Cyclops Krupp and Essen's monster cannon.

Happy young Titan, that between two oceans,
Thy guardian Atlantic and Pacific,
Growest apart from our Old World's commotions—
With room to spread, and space for powers prolific.

Wisely exchanging rifles, swords, and rammers,
For spades and ploughshares, axes, saws, and treadles,
Thou putt'st thy strength in engines and steam-hammers,
And thy gun-metal mouldest into medals.

Earth has no clime, no sky, but thou commandes;
No growth, but thy wide-spreading soil can bear;
No ore, but the rich ground on which thou standest,
Somewhere or other, bids thee stoop and share.

No height thou hast but all thy sons may reach;
No good, but all are free to reap its profit:
No truth, but all thy race may learn and teach,
No lie, but whoso lifts its mask may scoff it.

Oh, happy in thy stars, still rising higher,

Happy e'en in thy stripes so lightly borne.
How far may thy meridian growth aspire,
That showest so majestic in thy morn?

To what height may not Heaven's high favor
lead thee,
In cycle of the ages yet to be,
When these first hundred years of life have
made thee,
For arts and strength, the giant that we see!

—London *Punch*.

BALANCE OF THE ORGANS OF MIND.

THIS excellent article, related to a subject which was discussed in an editorial in our February number, is derived from the *Western Rural*. It indicates that there are not wanting some who study society with a good knowledge of phrenology to guide their observations.—ED.

"During a long succession of ages, ignorance and wrong education brought into action hereditary causes, and the result has been a change in the comparative size of organs at birth, extremely varied, and under like circumstances of education the variation can not be changed. This condition may be properly called the lost balance of physical conformation; and as a general rule the education we receive is incapable of restoring the balance in manifestation. That an even balance of all the organs is most desirable we may readily believe when we look at the best man who has lived since Christ—our own beloved Washington—and see the most evenly-balanced head of which there is any record. George Washington was not a brilliant man, was not a wit or orator; nor was there a single trait of character, except a uniformity of conduct in all that was good, kind, and loving, but what may have been exceeded by others. But the scope of his mind embraced a wider range; his judgment proceeded from all the correlated faculties giving their unbiased testimony, and consequently his errors were few. The right thing in the right time and place, for many consecutive years of public service, announced him as a model man in national government, and his private life was a pattern of domestic happiness seldom equaled.

"Patrick Henry, Henry Clay, and others, were noble men, leaving Washington far behind in the field of eloquence; and Daniel Webster, as he was before brandy had benumbed his brain, with his massive Causality could dive deeper and come up drier than any man on this continent; and yet he could not compare with the good, the great, the unequaled Washington. The only men of our country who approximated him was Benjamin Franklin and the "old man eloquent," who died at his post in the House of Representatives. Knowing, then, that through hereditary causes and false education, the brain of man has made a departure from its original shape, and knowing that a disproportionate size of the physical organs of the brain are opposed to the most perfect development of mind, we at once see the importance of restoring, if possible, the lost equilibrium of comparative size. We believe this may be done in a few generations, provided parents and teachers are taught to use the means, and can be induced to see the present and ultimate benefit that would accrue to mankind generally.

"Let us suppose that we have a boy five years of age, whose predominating organs are Alimentiveness, Acquisitiveness, Secretiveness, and Destructiveness; and whose moral organs, especially Conscientiousness, are comparatively small. Educated as children usually are, it would be little less than a miracle if he did not occupy a felon's cell in the State-prison, or swing from the gallows, before he was twenty-five years of age. These organs being large, and receiving instruction before the moral organs, and being also the most active, would be likely to maintain their advanced position and bid defiance to all the moral restraint within and without. But if such a child were taken in hand by qualified parents at birth, and nearly all of the food of these organs withheld, while appropriate food was given to all other organs as soon as

they were able to digest it, and this process carefully pursued for a few years, till the intellectual organs were duly stimulated and enabled to see and appreciate causes and effects, then you have a healthy growth of these, while the dangerous are not grown in proportion, and are now in a greater or less degree under the control of the natural governors.

"If this course is carefully pursued, the boy will probably escape criminal acts, and become at least a decent citizen. To let such a child go till he is six years old without careful training, is to defy the effects of early education and doom him to crime and suffering. It would not do to stop here, for fear we might lose a portion of what we have already gained; and to secure the full benefit of this early training, we must have teachers who are tolerably well versed in the philosophy of mind; and when the child is sent to school, a full and reliable mental chart, with remarks by the examiner, should be given the teacher, that he may understand the weak and the strong points of character, and thus be able to continue, as far as advisable, the course already so advantageously adopted. And the youth is transferred to an academy, and a new chart should go with him; and to more surely reap the advantages of this, the law of the land should require all academical teachers to undergo a vigorous examination in the science of mental philosophy, both in its facts and application under various combinations of faculties, by a committee of practical examiners, appointed by legislative authority. The carrying out of this course in a collegiate course is none the less needful.

"It is through these means that the peculiar adaptability of each student can be most certainly known. One-half of the community to-day do not know whether they are engaged in the business for which they are best adapted, and thousands are engaged in mercantile transactions who ought to be tillers of the soil; and more likely than not there are men engaged in law, medicine, and divinity who would move more in their natural sphere if working by the month, at fair wages, for genuine business men. Many a man has mistaken his calling, which others can see but his overgrown Self-esteem, and a disinclination to physical labor blinds him to the facts, and he plods on through his allotted time a poor stick, but still a unit in the enumeration of souls. Even grown-up, intelligent men are often mistaken in their vocation, till the touchstone of mental philosophy opens their golden gate and pushes them in.

"I recollect a case in point, but the name has escaped me. At any rate, the individual was a poor man, working out by day's work for a living, when, at a phrenological lecture, he had his head examined, and was told that he was specially fitted for buying and selling stock, and that he could not fail of success if he would engage in it. On the strength of the strong recommend, and to test phrenology, he said, 'A friend lent him a little money, and he commenced a business he had never dreamed he was fit for, and in ten years he was worth one hundred thousand dollars.' This shows unequivocally that man is a poor judge of his own capacities and fitness for what he undertakes, and that it makes a vast difference to him whether he is on the right or wrong track. It not only makes a difference in the matter of dollars and cents, but in the enjoyment of life as well—for that group of organs that peculiarly fits him for any given business is also capable of affording him the largest share of happiness of which his mental growth is susceptible.

"The course above indicated seems to us the only available method, as yet known, by which the hereditary disproportioned physical brain can be again restored to its original condition, and preserving that equilibrium which shone in a gentle, mellow light on the world in the person of our Washington."

A PAPER CHURCH.—There is a paper church near Berlin which can contain 1,000 persons. It is circular within, octagonal without. The reliefs outside and statues within, the roof, ceiling, Corinthian piliars, are of papier mache, rendered water-proof by saturating in vitroil, lime-water, whey, and white of eggs.

HOW TO TEACH.*

THE LAW OF MAGNITUDE.

FACULTY OF SIZE.

SIZE, or extension, is a condition or quality of things. Everything that we can imagine, which is tangible, occupies space, has bulk, magnitude, and extension. This differs from the quality of form, for things may be of the same form, yet of very different size. Take a ball, or a circle, which is uniform, or anything having irregular form, it may be magnified a thousand diameters and yet retain precisely the same form. We photograph the human face. Sometimes it is as large as a silver dollar, sometimes half as large, sometimes a fifth part as large, yet the precise form is retained. The smallest shot, and the largest cannon-ball, are identical in form, and the faculty of Form, in respect to them, is thoroughly satisfied; and it is only by means of the faculty of Size that we are enabled to judge of the difference between them, and this is done if the size be varied in the least degree. When we look into a tailor's window and see the elegant figures, representing fashion-plates, it does not strike us that they are too small. The form is satisfactory, and that is what we look at. When we look at a statue that is above the ordinary size, as long as the form and proportions are satisfactory we accept it as correct. Yet if we exercise the faculty of Size in respect to these objects, we recognize the truth of the matter without inconvenience.

The organ of Size is indicated by massiveness of brow outward from the root of the nose. See Fig. 3, page 25.

USEFUL TO MECHANICS AND ARTISTS.

This faculty is useful in every grade of mechanism and in every form of art. The turner of wood, having his pattern before him, after awhile becomes accustomed to the size and form of the parts of the article which he is turning. Suppose it be a chair-round, or a balluster for a stair-case, the form of every part, and the size of each part of it, become so impressed upon his memory that he may remove the pattern and work day after day, perhaps turning a thousand pieces, and they will be so nearly alike that they may be put into the ballustrade, or into the set of chairs, and the observer will not detect any difference in the form or size of the different members.

The blacksmith must have the faculty of Form to give the requisite shape to his work, but he must also have the faculty of Size strong and active in order to give it the requisite size. A shoe for the foot of a great dray-horse is one thing, and a shoe for a pony, though in form like the other, is decidedly a different thing, being not more than half as large. A skillful blacksmith will work all day making horseshoe-nails or rivets, and he will measure the size of each by the eye so accurately that half a dozen which he makes in the morning compared with half a dozen that he makes in the evening—the first and last of his day's work—if they are placed on scales will be almost identical as to weight, and consequently in size.

Men who are accustomed to judge of cloth will detect the difference in thickness where it is very slight indeed. The same is true with paper-dealers and paper-makers. A man who attends a paper-machine, where the paper comes rolling off at the rate of fifty feet a min-

* From "How to Teach, according to Temperament and Mental Development; or, Phrenology in the School-Room and the Family." By Nelson Sizer. S. R. Wells & Co., New York, Publishers. Price, by mail, $1.50.

ute, will gently take hold of it with the fingers, as it is passing, and detect the extra thickness or thinness, and rectify it, where that difference will not amount to more than half a pound in the ream, containing 480 sheets. It would be detecting a difference of 120th of one 480th part of a pound; and when this difference in the thickness of the sheet is understood, the fraction is found to be an exceedingly small one. Yet the judgment of the paper-maker is absolute and instantaneous in the matter. That may be called a cultivated condition of the organ of Size.

Wool-sorters will understand it when we say that they can take a lot of wool and assort it into sixteen different qualities, grading it according to the coarseness, or *size*, of the fibre; so that if a handful of wool were taken from each of the seventh and ninth qualities, for instance, the sorter would instantly recognize, by handling them, where each belonged. We have seen wagers won, in half a dozen instances, by wool-sorters, who would return each handful to its proper department, though there might be two or three qualities between the specimens judged of.

In many trades work is done by the eyes as to form and size. We have instanced the turner and the blacksmith. The modeler, also, the pattern-maker, and even the artist, are obliged to estimate size as well as form without opportunity for measurement. The stone-cutter, the sculptor, the man who works at irregular forms in wood, must carry the size as well as the form of the article in the mind. In the work of the kitchen, also, the strength or the weakness of this faculty will often be seen. When one biscuit is a third larger than another, and one slice of bread twice as thick as another, or thick on one side and thin at the other; when the table is set with the plates at irregular distances, and everything is too much huddled or scattered; when the library books are adjusted so that the little and the large are mixed together, we may know that the administrator of such affairs is poorly developed in the organ of Size.

Persons who follow needle-work, if this faculty be well-developed, will have all the foldings, plaits, and parts of trimming harmonious as to distance, size, and proportion. If the faculty be weak, there will be irregularities that will be noticeable. A person who works at any trade, or artistic occupation, which requires working by the eye, should have the faculties of Form and Size so developed as to be able to do the work in such a manner as not to awaken the criticism of the observer. Some work is done with sufficient accuracy for all practical purposes, which, if carefully measured, would evince some difference in size and form; but he who can work so closely by the eye that others, who are good judges, will not detect the difference, his accuracy is quite sufficient. We often detect error in distance between the pictures in a room. Those who are deficient in this faculty should always adjust by measure, so as not to offend the taste of those who have good judgment in this respect.

INTUITIVE JUDGMENT.

There is much of the business of life which has to be done in an off-hand way. Important transactions are often made where weighing and measuring are out of the question. For instance, a man can not measure the contents of a tree to determine its height, or its size at the height of fifty feet, or how much timber it will make, and how much he can afford to pay for it. If he were dependent upon absolute measurement it would require a good deal

of expensive apparatus and time; but men who are accustomed to buy timber will look at a forest tree, which perhaps will measure seventy feet to the limbs, and will take it in by the eye, the magnitude of it, and the amount of planks, boards, or timber which it will make, and do it almost instantaneously; and so he will go from tree to tree until he has estimated several acres of timber, or many scattered trees, here and there, over the whole forest; and he will buy them standing, and his estimate will be almost as nearly right as an accurate measurement would give it if the trees were lying on the ground.

CATTLE-BUYERS.

Men who buy cattle for the slaughter are obliged to judge of the weight by size. They learn by carefully walking around an ox and scanning his size, then driving him on the scales and weighing him, and in this manner they soon become experts in judging of the weight. We had a stranger under our hands, and noticing the enormous development of the faculty of Size, also of Form, Individuality, and Weight, we told him that, if he were accustomed to buy cattle, he would go, with memorandum-book in hand, through a drove of oxen consisting of a hundred, which would weigh from 900 to 1,600 pounds, and in less than a hundred minutes he would record the weight of each, so that it would not vary, on an average, ten pounds when the oxen were brought to the scales. He burst out laughing, and said: "I can do better than that; it is my business. I bought 107 oxen a short time ago, in one drove, and they varied from my hasty estimate only 450 pounds in the total weight." We asked him if the weight was more than he estimated it, or less, and he replied, with a smile, "Oh, it was more, of *course*." That term "of course" appeared to us impudent. The idea of a man's estimating the weight so closely, and yet feel so confident that, if his estimate varied from the true weight, it would be four pounds on each ox more than he had estimated it, seemed impossible.

The reader will thus see how important the faculty of Size is to many men whose business does not require them to take the artist's or mechanic's tools in hand. The lumber trade is a large business; cattle-buying is an important branch of industry; and he who has not the proper faculties for estimating cattle on the hoof, will utterly fail of success. He will estimate the weight of cattle so low that no owner will sell to him; or he will be willing to call the weight more than he can afford to pay, and thus ruin himself.

The engineer needs to have this faculty well-developed—in fact, all the perceptives. A man who is accustomed to engineering, especially laying out railroads, will first go over the ground without instruments, bending through valleys and over hill-sides, making what would be called a walking survey, and sticking stakes as a general guide to the surveyors; and we have conversed with some engineers who said they could lay out a railroad by the eye, up and around mountain-sides, in such a way as hardly to vary six feet in the mile from the proper grade, and this is done mainly by the faculty of Size, in connection with Weight and Form, which estimate the variation in grade.

Butchers, who cut up meat, learn to know the weight by the size of the piece they cut from and the thickness, so that they will cut within an ounce of what they wish to. But we have noticed that if we ask for two pounds, they give two and a half; if we ask for two and a half

pounds, they give three, which shows that they know the weight exactly. Therefore if we want two and a half pounds, we ask for two, and when we want three, we ask for two and a half. Thus they not only prove that they are excellent judges in the matter of weight by size, but that they have an eye to profit, bringing in the faculty of Acquisitiveness as well as that of Size.

The portrait-painter requires the faculty of Size quite as much as that of Form. For instance, in drawing a face one may get the general form of the head and face correctly, but in putting the features in, the nose may be made considerably too large or too small. Though perfect in form, it is too large or too small for the face. The mouth may be too large or too small, yet perfect in form, and the same may be true of the eye. Now if the nose be a third too large or too small, but precise in its shape, the faculty of Form does not tell the portrait-painter that, for if the shape be right the faculty of Form is satisfied. If the faculty of Size were small and the organ weak, the artist would not detect the fact that he was making a caricature; but if the faculty of Size were active and well-developed, he would have the requisite proportions between all the members of the face.

CARICATURE.

The caricaturist must have a fine sense of Form and Size to estimate the true size and form, so as to know when the portrait leaves the boundaries of the congruous and enters the domain of caricature—since a caricature consists largely in exaggerating the peculiarities. If a man is known to have a small nose, or a small chin, the caricaturist needs only to make it smaller and he has a caricature. If a man is endowed with a large nose, or a large mouth, or a large ear, the caricaturist increases the size of the nose, or the mouth, or the ear, keeping the form intact. So if a man is known to have very long and thin legs and large feet, the legs need to be made a little smaller and a little longer, and the feet larger, and the result is a caricature. The faculty of Size is chiefly the one by which caricaturing is recognized, as well as the one through which the artist knows how to make the caricature. Perversion of form is also a source of caricature, but such results are more often produced by irregularities of size and their queer juxtaposition. Sometimes a small man is represented riding a very high horse; and one of the richest of caricatures is a very tall, long-legged man mounted on a donkey, requiring the rider to bend his legs a little to keep his feet off the ground. Now there is perhaps nothing ridiculous in the donkey alone, nor in the man alone; but when they are combined, the contrast of size is such as to make it superlatively ridiculous. There is, therefore, a deal of fun and mirth wrapped up in the work of the faculty of Size. It occupies, to be sure, but a small space in the brain, and so does the pupil of the eye occupy a small place as to space, but it does a world of work. So the faculty of Size becomes a window for that of Mirthfulness.

CAN THE TEACHER UTILIZE IT?

Whether the teacher can at once see how he may make use of the faculty of Size in himself, or in his pupils, so as to promote their culture and education or not, true it is that this faculty exercises a wonderful influence in the minds of pupils in many ways. In penmanship, for instance, a person who has the organ large is likely to keep the size of his writing the same from beginning

to end of a word or line. Some writers start largely each word, and make one or two letters uniformly, and then begin to taper down, and if the word ends with *m*, there is a slightly crooked mark for the first part of it, and the last two members are degenerated into a straight line. In teaching penmanship, therefore, we would recommend that a special point be made to call the faculty of Size into use, so that the sizes of the lines may harmonize and the different letters be equal. If a page of writing shows uniformity as to size and shape, though it may not be elegant, it looks and passes well. A teacher may, profitably to his pupils, take his crayon to the blackboard and write awhile, making first the letters of a word or line large, and then gradually tapering down to a little, crooked line, and thus make a caricature of it for the pupils. Then he may make the first letter of a word of a given size, and the next letter smaller, and the next two letters of irregular size, but larger, and so all the way through. This will produce a salutary and memorable effect on the school.

One has not to receive very many letters, from different people, to see all the caricatures that can be made in the realm of chirography—large and little letters jumbled together, some leaning as if they were running a race—*h*'s particularly seem weak in the joints, and their backs lean in sympathy, and *k*'s and *l*'s standing up, as if they were liable to fall backwards; and when these irregularities occur in the same words, one need not go to *Punch* to have something to laugh at. Every effort a pupil shall make in respect to equality of magnitude, under the dominion of Size, in penmanship or in anything else, is a good culture of that faculty, and until that fact is insisted on in the teaching of penmanship, the faculty is not likely to receive training and culture from the process. But it should be shown up, talked about, ridiculed by exaggerations, and that will induce pupils to think, "I must make my letters of equal size, of proper size, or a given size, as well as of proper form." One may make his letters of correct form, but they sometimes look like horses and colts, sheep and lambs, cows and calves, all in a row, shaped rightly, but ridiculous as to relative size.

The faculty is cultivated in the study of geography, in respect to distances. In map-drawing Form and Size, combined with Locality, give skill to the pupil in whatever relates to their use, as well as to the man of business, mechanic, or artist in full practice. This faculty also is rendered active in respect to things tangible, and may also be made very serviceable in the study of mathematics, which is the science of quantity, since extension is one of the elements of quantity, and number is another; but this will be set forth when we discuss the subject of mathematics and the faculty of Number. NELSON SIZER.

(To be continued.)

THE EFFECTS OF PHYSICAL CULTURE.—An official inquiry into the results of gymnastic exercises has recently been instituted at a military gymnastic school in France. The results of the inquiry, which extended over six months, established: 1. That the muscular force is increased on an average, 15 to 17 per cent., and occasionally to 30 per cent. 2. That the capacity of the chest is increased by one one-sixth at the lowest. 3. That the weight of the individual is increased from 6 to 15 per cent., while the bulk of the body is diminished, thus showing that profit is confined to the muscular system. The increase of muscular force was generally confined to the first three months of the course. During the last moiety a serious diminution usually occurred; indicating the necessity of moderating or suspending the exercise.—*Scientific American.*

"THE MAN OF ONE IDEA."

EDITOR THE PHRENOLOGICAL:

Kindly permit me space in your columns for a brief rejoinder to the paper headed as above, published in the December issue of your valuable journal. To employ a vulgar expression, its author is "down" upon "the man of one idea." "The curse of this utilitarian age," says he, "is our so-called 'practical education.'" And the inference is, that "the man of one idea" is a 'practical man' and a curse, of course.

He likewise says: "When shall men learn to recognize this most significant truth, that there is no department of science—using the term in its broadest and most liberal sense—no branch of knowledge, that the true and faithful student can possibly afford to ignore." A question arises here: What is the extent and vastness of the field embracing these many branches of knowledge—these many departments of science? and then, what is man's capacity for grasping this knowledge, and his power of retaining it?

"I can call spirits from the vasty deep."

Rejoinder—"Why, so can I, and so can any man."

"But will they come when you do call for them?"

A draught-horse can draw a load of wood up to a certain maximum weight; beyond that his strength is at peril. One horse can draw a greater weight than another. I take it as a phrenological fact, that men are not all possessed of the same mental capacity. Some have more mentality than others. If A. B., possessed of a goodly measure of intellect, can master any five of the sciences, C. D., not his equal, can not get over so wide a field. *Ergo*, all men can not alike become acquainted with every department of science, every branch of knowledge. The will, the desire, the longing may be ours, but all this does not supply the power. "We must cut our coat according to our cloth." "The spirit may be willing, but the flesh is weak."

"Consider," this writer goes on to say, "the two classes of men, those who know everything of a little, and those who know a little of everything—and then 'choose ye this day whom ye will serve.'" That is to say, choose between the man who has made a specialty of some one branch of knowledge, and is consequently an authority upon it, and him who has a smattering of every branch—a jack of all trades, and master of none—and then, "choose ye this day whom ye will serve." For example, I desire an acquaintance with the science of geology. Do I go to the man who has a knowledge of this, just as he has an understanding of fifty other topics? or to him who has made geology his "one idea," and knows "whereof he speaks?" Certainly, I go to the latter. We glance at history, and find that it is to "the man of one idea" the world owes its prosperity to-day. What of Bernard Pallissy? His "one idea" was the perfecting of his art as a potter, and for this he sacrificed every comfort upon earth, and, after sixteen years of persevering labor, succeeded.

In Cambridge, Mass., in poor and humble circumstances, resided one who was possessed of this one idea, viz.: That some mechanical contrivance could be planned by which female labor would be greatly lessened. For this end he worked, labored, persevered, and failed, only to work, labor, and persevere still more; but in the end, came out "more than conqueror." The world is indebted to this man, Elias Howe, for that wonderful invention, the sewing machine.

Dwight L. Moody became possessed of "one idea," and is, to-day, the most successful preacher of the age. Paul was a "man of one idea." He labored for the salvation of souls. "But this one thing I do, forgetting these things which are behind, and reaching forward unto those things which are before, I press forward to the mark for the prize of the high calling of God in Christ Jesus."

Father Matthew beheld the evils of intemperance, and battled zealously for their suppression. He was a man of "one idea."

Does not the world owe these men—and a long roll of honor that might be added—a deep debt of gratitude for what they have done toward its progress and advancement?

While pursuing the study of his specialty, "the man of one idea" is also giving scope to the development of his other faculties. In the case of Pallissy, in his search for designs, he took to the study of natural objects, and is spoken of by Buffon, "As so great a naturalist as only nature can produce."

And again: Who has created these many departments of science, etc., which no earnest student can possibly afford to ignore? Is it not "the man of one idea"—the specialist—he who has given himself, body and soul, to some particular study, until his knowledge of it has become so thorough, who is recognized by probably the entire world as a man whose works can be studied with profit by all thinking men and women? These are the creators of the literature and science of the present day.

The curse of this present age is the lack of continuity and steadfastness of purpose on the part of people, and more especially, the young. We aim too much at versatility of talent—at knowing "a little of everything"—and as a result, end by knowing little of anything. The world's work to-day demands fixedness of purpose, and if we would erect any lasting monument to our names, it must be by giving ourselves earnestly to the development of that special work which God, in His wisdom, designed us to accomplish. Truly yours,

J. S. ROBERTSON.

GROUNDWORK FOR A HEALTHY CONDITION OF SOCIETY.

LABOR being a gauge of values; given the problem of an equitable exchange; to the solution of which an earnest and sincere desire to measure unto each and all their part and lot; what follows? Of course the present status of social order necessarily undergoes a change, for the simplest mind can conceive the inharmony (to call it by its mildest possible term) of one man possessing—supposed to be resultant of one man's labors—several millions of dollars accumulated in say thirty years.

Improvidence left out, there seems to be some inequality in the laws of distribution to enable labor to be so widely differing in its rewards. Now, if the philosophers state the case fairly—and why may they not?—the use of the "goods the gods provide" is a qualifying title to possession in the highest conditions of civilization; thus, a drunkard and a debauchee holds tenure by sufferance. The great weakness of the law and its present executors, is the tangible inequality of taxation. If the law can not remedy this, it argues defect. The mental gladiators and gymnasts that play such pranks before "high Heaven," and their fellows can scarcely see "theirsel as ithers see them" or they would do differently. What is made by one is lost by another in the present state of society. Now, what is wanted is a condition wherein neither party makes or loses in the sense alluded to. It is not so very hard a task to create these conditions. Philosophy teaches that if a thing be desirable, it is attainable. It may be necessary to teach some truths that now are thought to be unacceptable, before we are prepared for the state where make and lose are unknown in their present sense. This, of course, takes time. No great thing is done without time and labor, and the result of this change would be so grand in its workings that no one would think the time and trouble misspent. Those who are interested in keeping up the present status will cry out, "Utopian," "impracticable," dreamer, agitator, fanatic," etc., but such epithets are expected. Success is effort gone to seed, and it is our desire to work; not to go to seed. To combat the errors of a fossil age is the pleasant occupation of the healthy mind. It needs no elaboration to prove that the whole social fabric is woven of the tissue in which an essential constituent is the fallacious dogma of "make and lose." Exchange is all made on that basis now; and will continue to be so made until

a better way is made clear. This must be done by education. Those who control the media, such as the health journals, and all truly advanced literature, have it in their power to revolutionize public opinion on these subjects, guided as some of them are by a spirit of self-sacrifice, for we are ready to admit that such work "pays" but poorly at first, yet eventually is the best rewarded.

A neighbor's boy said to me, when he saw me grubbing roots—knowing that I habitually did my own work—"How is this, Mr. S ——, you are always digging or doing some such drudgery; I thought an education was to save people from drudgery?"

And this young man was of ordinary intelligence. Now, this strikes a key-note in the educational fallacies of the age. Education, he had conceived, was to absolve him from the penalties of existence. Is it not time these horrible fictions were remedied? Thus the incubus has grown until the labor of those who do work is doubled. Constant tendencies to shirk the less desirable employments, and finally a distaste for any useful work—and we go on boasting of our free schools and "progress" and superior advancement, and all that hyperbolical—not to say diabolical—nonsense. This has gone on until the ponderous machinery of State is run on the principle of using a sledge-hammer to demolish a mosquito.

Look at the advertisements in every newspaper to the effect that five, ten, or twenty dollars per day can be made by some contrivance. What is the interpretation of this? Does not every fair-minded person know that this is theft? While wages are at an average of even less than one dollar per day, by some "hocus-pocus" it is made legal to take ten times that amount. Until education succeeds in teaching this, it fails of its normal mission.

Los Angeles, Cal. F. M. S.

THE METRIC SYSTEM IN BRIEF.

THE American Metric Bureau (13 Tremont Place, Boston, Mass.), organized for the purpose of promoting the new system of weights and measures, invites public attention to these two important facts:

I. The Metric System has been adopted in France, Germany, Austria, the Netherlands, Southern Europe, and South America, and has been legalized in Great Britain and the United States.

II. The Metric Tables are decimal and simply related, and a statement of them is thus given:

LENGTH.

10 milli-meters make 1 centi-meter ($\frac{1}{100}$ meter)
10 centi-meters " 1 deci-meter ($\frac{1}{10}$ ")
10 deci-meters " 1 meter (1 ")
10 meters " 1 deka-meter (10 ")
10 deka-meters " 1 hecto-meter (100 ")
10 hecto-meters " 1 kilo-meter (1000 ")
10 kilo-meters " 1 myria-meter (10000 ")

CUBIC MEASURE.		CAPACITY.		WEIGHT.
1 CUBIC CENTIMETER *or* 1 MILLILITER	($\frac{1}{1000}$ *liter*)	*of water weighs* 1 GRAM	(1 *gram*)	
10 *cubic centimeters*	" 1 *centiliter*	($\frac{1}{100}$ ")	"	" 1 *dekagram* (10 *grams*)
100 " "	" 1 *deciliter*	($\frac{1}{10}$ ")	"	" 1 *hectogram* (100 ")
1,000 " " *or* 1 CUBIC DECIMETER	" 1 LITER	(1 ")	"	" 1 KILOGRAM (1,000 ")
10 " *decimeters*	" 1 *dekaliter*	(10 ")	"	" 1 *myriagram* (10,000 *gr.*)
100 " "	" 1 *hectoliter*	(100 ")	"	" 1 *quintal* (100,000 *grams*)
1,000 " " *or* 1 CUBIC METER	" 1 KILOLITER	(1,000 ")	"	" 1 TONNEAU (1,000,000 ")

Any one who will try to write down the common tables of long measure, cubic measure, liquid measure, dry measure, avoirdupois weight, troy weight and apothecaries' weight, also the cubical contents of the measures of capacity, and the weight of water each one holds, and the weight of a cubic inch, foot, etc., of water may learn why the Metric System is coming into use so rapidly among nations.

It is only by training all together—the physical, intellectual, and spiritual elements—that the complete man can be formed.

A BRIEF RETROSPECT OF MOTOR-THERAPY.

WE are justified in believing that the cure of deformities, atrophy, and paralysis by vibratory impulses is essentially a process in which molar force is transmuted into vital force, or, in other words, it invigorates the local nutritive apparatus, that is, the nerves and capillaries, by distending the latter and increasing the quantity of blood supply, which had become less than normal by the withdrawal of the normal supply of nervous power that had maintained the elasticity and contractile power of the capillaries, which in its turn was caused by deposits of some kind along the great routes of supply of nervous power that derive their origin from the cerebro-spinal axis.

This opinion is borne out by the discoveries made in recent years with the microscope. (See "Comte Rendus des Seances et Memoires de la Société Biologie," Tom. 3, Ser. 5, pp. 49–93). It has been ascertained that in paralysis and atrophy the elementary fibres of the muscular tissue are atrophied or wasted away; in some instances so much so as to leave scarcely anything remaining except the sarcolemma that invests them.

The average diameter of the elementary fibres of human muscles of the healthy male subject has been ascertained to be 1.352 of an inch; in the healthy female 1.454. This difference between the sexes in the diameter of their respective muscular fibre, Dr. Houghton, in his work on "Animal Mechanics," thinks favorable to greater powers of endurance on the part of women.

It has also been ascertained that these fibres are not cylindrical, as one would suppose; but upon making a cross section, the cut ends present the appearance of irregular polygons, which form is induced, no doubt, by the mutual pressure of the fibres upon each other during contraction. The capillary vessels are interposed at the angles of these polygonal fibres. This latter fact goes a great way in explanation of the manner in which the blood is supplied to these structures. By the alternate increase and decrease in diameter of these fibrous elements a pressure would be more or less constantly brought to bear upon the interfibrous vessels, producing a kind of pumping effect, which would be constantly favorable to innervation, nutrition, and circulation, and consequently to the health of the whole of these structures.

In certain memoirs ("Comptes Rendus de la Soc. de Biol.") it is stated that in paralysis with atrophy in children that the muscular fibres are greatly decreased in transverse diameter, and, consequently, in power, when taken either singly or in the aggregate as constituting muscle, owing, no doubt, to lack of nervous stimulus to the capillaries that are placed interstitially, parallel to their long axes, for the purposes of conveying nutriment to these fibres, and that they finally degenerate into adipose matter, or are degraded into some substance not possessing contractility. This lack of nervous power is due, no doubt, to abscesses in the cord in the anterior portion of the gray matter, or from the deposition of abnormal substances along the course of the great nerves, as Dr. Taylor observes in his work on "Paralysis."

In motor-therapy we supply exactly the proper conditions for the removal of these deposits or abscesses by means of the vibra-

tory impulses which constitute almost all that is peculiar or valuable in this mode of treatment. By the rapid impressment of some more or less unyielding body upon some part or the whole of the body, the processes of excretion and nutrition are accelerated, either locally or generally, so as to produce most astonishing results in many cases. Its great value consists in supplying in its peculiar manner what nature from debility, or for some other reason, has denied the parts affected.

In one instance, in my own experience, in six weeks I restored to nearly its normal dimensions and usefulness an arm that had been atrophied and partially paralyzed for years, and the patient recovered the use of it so as to be able to forge and weld heavy bars of iron at his anvil.

In another instance I was nearly successful in breaking up a heavy cold in one application of the treatment. In still another instance, at very irregular intervals, in the course of a few months, the treatment was applied to a case where great deformity of the shoulder existed, accompanied with constant pain in the region of the brachial plexus, and the patient was entirely cured.

There are many methods and systems of administering this kind of treatment, and different individuals operate upon different plans. I may mention here various noted motor-therapists, and the names by which they designate their systems: First is Ling's "movement-cure," and all that has grown out of it through his disciples in his own country, and Dr. Taylor, Dr. Allen, and others in this; another, apparently distinct in methods, at least, is that of Dr. Munroe, of Boston—he calls it the "nervous-adjustment cure." The Chinese and Japanese have practiced something of the kind from time immemorial, and, in all countries, certain individuals have been known as "rubbers" or manipulators for curative purposes. In France the system is called *massage*.

It often happens that manipulators claim to possess supernatural powers or "special gifts," which, of course, is absurd in the light of modern science, that, in explanation, declares in favor of the correlation of vital and physical forces, but does not attempt to show the nature or *how* of this correlation or transmutation—a subject which is included perhaps in Mr. Spencer's category of the "unknowable." But as to the "laying on of hands," or supernatural powers claimed by wandering quacks and impostors, we have no faith in them; and would say, that of all things that will bring a good thing into disrepute, it is having any connection with medical hocus-pocus, spiritualism, or hecatism.

In conclusion, we would say that the treatment may be applied by a manual operator or by properly-devised machinery; but, in any case, it requires a thorough knowledge of physiology, anatomy, and physical science in their relation to the organism to apply it intelligently and discriminately. It can be used for murderous purposes, as well as for good. Above all, it requires patience and perseverance and a good share of common-sense judgment to be successful, as well as plenty of life and strength.

JOHN A. RYDER.

LETTERS TO A SON IN COLLEGE.

No. III.

MY DEAR BOY:—In my last letter I promised in this to make some practical observations on the function of digestion.

If one bodily function can be said to be of greater importance than another, that of digestion may properly be considered the most important in the animal economy. As digestion is, in brief, the conversion of food into blood, and as "the blood is the life"—that by which every bodily organ is nourished and sustained—a knowledge of the organs concerned in digestion and the causes which contribute to the proper performance of their functions must be highly useful, especially since they are placed so

immediately under our control, that they are liable to continual abuse through ignorance. I can not, perhaps, give you an idea of the process of digestion in a better manner than by following a morsel of food through the changes which it undergoes till it is converted into blood.

The food being taken into the mouth is, or should be, ground to a pulp by the teeth, and thoroughly mixed with the saliva which exudes from several contiguous glands during the process of mastication. It is then swallowed, and passes immediately through the meat-pipe into the stomach. This organ is simply an enlargement of the alimentary canal, and its function is to further elaborate and prepare the food for its final office of building up the tissues.

Having reached the stomach, the food is churned about by the contraction of that organ for two or three hours till it is thoroughly mixed with the gastric juice, which the contact of the food with the lining membrane of the stomach causes to exude from its surface very much as sweat exudes from the pores of the skin. This gastric juice possesses the property of dissolving the food into a substance somewhat resembling buttermilk, called chyme.

The stomach having performed its office, the food (now chyme) passes out into the first portion of the intestine, called the duodenum. Here the bile and the pancreatic juice—which are excretions of the liver and the pancreas—are poured into the chyme, and the result is its separation into two distinct substances—the one a milky-white fluid, called chyle, which is the nutrient portion of the food, and the other a yellowish mass, which is its indigestible residuum. As these substances pass along through the intestines, the chyle is sucked up by a system of absorbing vessels called lacteals, whose mouths open into the intestines. These gradually coalesce into larger and larger trunks, till they all meet in a tube about the size of a goose-quill called the thoracic duct. This tube runs up along the back-bone till it meets the left sub-clavian vein at the shoulder. The chyle, being sucked up by the lacteals, passes up the thoracic duct and falls drop by drop into the venous blood as it is returning in its course to the heart. Thus the food gets into the circulation. But a most important change is still necessary before digestion is completed, and the food is fitted to become a constituent portion of the body.

The chyle, falling into the venous blood, is carried along with it to the heart, and, by the contraction of that organ, it is thrown into the lungs. Here it undergoes its final change, called aeration or sanguification. This is effected by its contact with the air inhaled in breathing through the cellular membrane or the walls of the air-cells, of which the lungs are largely composed.

The food, now converted into life-bearing blood, is again returned to the heart, whence it is sent out through the arteries to sustain and nourish every living part, and to supply the waste which is the unceasing result of life and action.

Now the fitness of the blood for performing its peculiar office of building up the tissues and supplying the waste of the system and thus preserving it in health and vigor, will depend largely upon the proper performance of three important functions in the process of digestion: namely, mastication, chymification, and aeration. As the conditions for the proper performance of these functions are placed almost completely under the control of the intellect and will, I will give you some practical directions in regard to each, hoping that they may prove sufficiently clear and convincing to win your attention and command your obedience.

First in regard to mastication. It is very important, as a preparation for stomach digestion, that the food be well broken down by the teeth and thoroughly mixed with the saliva. In order to this, it is necessary that we eat slowly and without drinking. Whatever may be the changes which the saliva effects in the food, it is certain that they must be important to digestion, else there would not have been provision made for such a copious secretion of this fluid during the process of mastication. If we eat hastily, time is not afforded for the proper division of the food by the teeth, nor for the secretion of a sufficient quantity of saliva. In drinking at our meals, also, the liq-

uid is apt to take the place of the saliva by moistening the food and accelerating its passage into the stomach. In either case we impose an extra burden upon the stomach by depriving it of the very essential aid which it is the office of the teeth and salivary glands to render.

If the food be imperfectly divided by the teeth, stomach digestion is impeded also, because the gastric juice can act only on the outside of the imperfectly-masticated pieces; whereas, if it were finely divided, the juices of the stomach would permeate every part of it and act at once on the whole mass. Therefore, drink nothing at your meals, eat slowly, and thoroughly masticate your food, and you will contribute much to the important process of digestion.

When the food has passed into the stomach, the second stage of digestion or chymification immediately begins. The stomach is a membranous pouch, whose normal capacity is a solid quart. It is largely made up of muscular fibres, by the contraction of which a vermicular motion is given to the food, which causes it to make a circuit of the stomach about every three minutes. The food in its progress, touching the lining membrane of the stomach, causes a flow of gastric juice. This, by the churning motion of the stomach, becomes thoroughly mixed with the food, and dissolves the various materials of which a meal is composed into one uniform substance.

Now, when we eat more than the stomach is naturally fitted to contain, it is unduly distended, and an unnatural tension is given to its muscles, which hinders them from contracting with their normal power. They labor and grow weary at their task, and digestion is imperfectly performed. It has been found, also, by actual experiment, that a given quantity of gastric juice can digest only a given quantity of food; hence, if we eat more than the normal secretions of the stomach are fitted to dissolve, the undissolved portion will be likely to sour, and occasion flatulency and indigestion.

Another fact in regard to digestion, of importance especially to the student, is that a great deal of nerve-force is expended in the process; so that if we eat more than the needs of the system require, the vital force is drawn away from the brain and other parts of the body and wasted upon the excess of food in the stomach. You have doubtless frequently experienced dullness and inability to apply your mind to study immediately after a hearty meal. The cause of this is that the blood and nervous energy are determined toward the stomach during the process of digestion, and the brain lacks a sufficient quantity to carry on its functions with success. If you eat three hearty meals a day, nearly all your nervous force will be consumed on your stomach, and you will perhaps wonder why your brain works so sluggishly; but if you will confine yourself to two meals, and eat no more than the needs of the system absolutely require, I promise you a freedom and energy of mind which will convert tasks into recreations.

This is a very important point, and I wish to impress it thoroughly on your mind. You can not impose an excess of work on any bodily organ without diminishing its power and detracting from the vigor of other parts. You may, by vigorous and protracted muscular exercise, develop astonishing bodily strength; but you will do it at the expense of heart, stomach, lungs, and brain. These will give of their vigor till the vital organs will be completely worn out in the service of the muscles, and, when the organs which manufacture vitality fail, all fails. This is the fate of nearly all those who make athletic sports a profession. They use up their vital organs early and die young.

So, you may devote yourself exclusively to mental labor, and appear for a time to be accomplishing wonderful results; but the brain soon becomes exhausted from excess of work, and the vital organs, deprived of the nervous energy which it is the office of the brain to supply, and weakened from lack of proper exercise, will be ill fitted to restore it to healthy activity. It is important, therefore, to give every part sufficient exercise to preserve the integrity of its function, but not so much as to weaken it or detract from the vigor of other organs. This remark applies particularly to the stomach

and brain, because the relation existing between them is so intimate that either is sensibly affected by a slight disorder of the other. Especially does the habit of loading the stomach with an excess of food make its ill effects known in the brain by rendering it dull and incapable of vigorous thinking.

I have intimated that you should confine yourself to two meals a day. Let them be a substantial breakfast at the usual hour and a light supper after the exercises of the day are finished. The breakfast should be much the more ample meal, because the supply of nervous energy which it is the office of sleep to restore is at its maximum in the morning, and digestion and all other functions are vigorously performed. The supper should be light, because the labors of the day have nearly exhausted the quantum of nerve-force, and the study of the evening will be ill performed if what remains has to be divided between it and the digestion of a hearty supper. Uniformity in time of eating is very important, but I will say nothing about that, because the hours for your meals will be regulated by the college exercises, which come at stated hours every day.

About eating between meals, a word may not be out of place, as some students are in the habit of spending their spare change upon nuts and confectionery. These articles are of little use as food, and, being eaten at all hours of the day, they keep the stomach in a constant state of irritation, which does not fail sooner or later to derange its function. Never eat simply to gratify your palate, but give your intellect full and free control of your appetite; and, observing these directions which I have given, you will avoid much physical discomfort and enjoy a freedom of mental activity, which, having once experienced, you will not be willing to barter for any gratification of the mere animal appetite.

The final stage of digestion, or that which it is the office of the lungs to effect, is not less important than that which is accomplished in the stomach. But, in order to a right understanding of this function, we must make ourselves familiar with the changes which the blood undergoes in circulating through the system.

There are two kinds of circulation going on constantly in the human body: namely, arterial, or that out from the heart to every part of the body, and venous, or that from the extremities back again to the heart. The blood is sent out from the left side of the heart through a large artery, which divides and sub-divides in its course till it finally terminates in branches so minute that it is impossible to stick the point of a pin in the flesh anywhere without wounding some of the vessels and causing blood to flow. Having reached the extremity of its course, the blood is collected by another system of vessels equally minute, called veins, which gradually unite and form larger and larger trunks, till they finally all meet in two large veins, through which the blood is poured into the right side of the heart.

Now, if we compare the blood of the right side of the heart with that of the left, we will find that it has undergone a great change in passing from the one to the other. It was sent out of a florid red color, loaded with nourishment for every part of the system; it comes back of a dark hue, loaded with impurities from every part of the system, and is no longer capable of sustaining life.

In order that the venous blood may be again converted into arterial, and its life-giving properties restored, two conditions are essential: the first is supplied by the chyle or nutrient portion of the food, which, as I have explained, is poured into the venous blood just before it reaches the heart; the second is the aeration of the blood in the lungs. The venous blood, having reached the right side of the heart, is propelled by the contraction of that organ into the lungs through the pulmonary artery, which divides and sub-divides through the substance of the lungs, just as we have seen that the aorta ramifies through every part of the body. And, as the veins of the body return to the heart the blood sent out through the arteries, so the lungs are supplied with veins which receive the blood from the extremities of the pulmonary artery after its change in the lungs has been

effected, and, uniting into larger and larger trunks, finally empty it into the left side of the heart, whence its life-giving properties having been restored, it is again sent out through the arteries to sustain and nourish every living part.

Again, starting from the throat, we find the wind-pipe sending out branches of tubes to each lung, which, like the arteries, divide and sub-divide till they finally terminate in clusters of air-cells, each from the 20th to the 100th of an inch in diameter. At every inhalation, these tubes and cells are filled with air, and each cell, being supplied with an artery and a vein, the blood in passing from the former to the latter comes in contact with the air inhaled through the delicate membrane of which the walls of the air-cells are composed. By this contact, changes are effected both in the air and the blood, by which the latter gives up its impurities to the air and receives in return its life-giving oxygen.

Pure atmospheric air contains about 78 per cent. of nitrogen and 21 of oxygen. After it has been inhaled and expelled by the lungs, it is found that 8 or 9 per cent. of the oxygen has disappeared, and its place has been supplied by an equal amount of carbonic acid, which is a deadly poison. Now, it is estimated that five hundred cubic inches of air a minute are required for the respiration of a single pair of lungs; and, as two-fifths of the vital oxygen disappears in the process of breathing, and its place is supplied by the deadly poison, carbonic acid, you may form some idea of the ill effects of breathing the air of crowded, ill-ventilated rooms. Unless the proper quantity of oxygen be presented to the blood in the lungs, its impurities fail to be eliminated, and it is returned to the heart to be again sent out through the arteries, retaining much of the poisonous matter from which it should have been entirely freed in its circuit through the lungs. The consequences are, it fails to properly nourish the body or remove its impurities. Especially does it affect the brain by occasioning headache, drowsiness, and incapacity for vigorous mental activity. Hence the importance, to the student, especially, of giving rational care to the conditions for the proper performance of this function. If you wish to study well, see to it that there is a free circulation of air through your room. If friends come in to visit you, increase the means of ventilation, because every pair of lungs adds to the vitiation of the air and increases the demand for a larger supply.

You will need to use your influence also to have your recitation-rooms properly ventilated. Go into one of these rooms from the outer air on a winter day after a class has been in session an hour, and if the effluvium which greets you does not give you a forcible illustration of the importance of ventilation, and the neglect with which the subject is treated by those in authority, practical physiology has made a great advance in college since I was a student.

Another condition very essential to the proper performance of respiration is a full and free expansion of the lungs. Anything which in dress or position cramps or restricts the chest is very prejudicial to the proper aeration of the blood; while, on the other hand, anything which tends to increase the amount of air inhaled, contributes in an equal degree to its revitalization.

So far as dress is concerned you probably need no advice. Were I writing to your sister, I would descant on the evil effects of tight-lacing. In regard to position, a word may be useful, as students are apt to induce round shoulders by bending over their books, and often take other positions which tend to cramp the capacity of the chest. An erect bearing is as essential to health as it is to good looks. In walking, let the shoulders be thrown back and down, the stomach in; the chest will thus be naturally brought forward. In sitting, let this position be maintained as nearly as possible; the lungs thus occupy their normal position, and are capable of being completely filled at every inhalation.

Much depends on the form of the seat in maintaining this position. If the back of the chair be high, and press only on the shoulders, they are brought forward; while the small of the back, which should be curved forward, having no support falls backward. The spinal column, which is

naturally a double curve, thus takes the form of an arc, and the consequence is that the heart, lungs, stomach, and other organs of the viscera are compressed upon one another and have not room to perform their functions normally. Let the chair in which you do the most of your studying be remodeled, so that it may be the fullest at the small of the back, and thus conform to the curve of the spine. Sit well back in it, and sit erect. There are few among the sedentary who have straight and naturally-curved spines, simply because of inattention to this important matter of position.

The exercise of the lungs must not be neglected, if you would preserve them in health and enable them to perform their function most effectually. Muscular exercise contributes much to this end, because it forces the blood more rapidly through the lungs, and induces fuller and more frequent respiration. Reading aloud and practicing elocutionary exercises are also very useful for developing the voice as well as the lungs.

You will also find it of great advantage to accustom yourself to the habit of taking a number of deep inspirations upon rising in the morning and upon going to bed at night, but see to it that you take them in pure air.

Perhaps you may think I am laying down more rules for your observance than you will be able to live up to. To a person unaccustomed to think of these matters, these rules may appear rather hampering. You must not expect, however, to abandon old habits and adopt new ones in a day; but persevere, and what now appear acts of self-denial, will after a time become habits so easy and natural, that you will wonder that you should ever have considered them restrictions. When you first began to read, you had to spell out every word. Now you are able to take in a line with even greater ease than you formerly did a word. You may acquire equal facility in the observance of the laws of health, and in that observance you will have the satisfaction of knowing that you are living in accordance with what is for your best interest, and what will meet with the approval of your moral sentiments. Affectionately yours,

PATER CONFIDENS.

ANOTHER ST. MARTIN.

THE medicists of Paris are interested with a curious case which has come under the special consideration of the eminent Dr. Verneuil. Not long since a lad was brought to him for treatment, at the Hospital de la Pitie, who had swallowed by accident a dose of caustic potash. The terrible escharotic produced so tight a constriction in the gullet that no food could pass down into the stomach. Death from inanition must have been the result had not Dr. Verneuil courageously resolved to perform the difficult operation known as gastrotomy. On the 26th of July, accordingly, he made an incision into the lad's stomach, and inserted into it an elastic tube through which food could be injected. In this way soup, fine-chopped meat, mashed vegetables, and drink were administered. By the 10th of September the young man had recovered a good part of his health and spirits, and was able to go about and help the servants in the hospital, and seemed to have almost as much life and energy as he had before the accident. Between the 18th of August and the 14th of September he gained ten pounds in weight, while being fed through the opening in his stomach. This case must have a rare interest for all students of the complex phenomena of digestion, and it can not but recall a stranger one which, nearly forty years ago, Dr. Beaumont, a Canadian, had the good fortune to observe. His patient enabled physiologists, in fact, to formulate nearly all our existing knowledge of the processes of stomachal digestion. This was Alexis St. Martin, who, while hunting, had a part of his side and the wall of his stomach blown away by the sudden discharge of his gun. Dr. Beaumont treated him so that he recovered his health; but though the wound healed, an

opening remained, and through it Dr. Beaumont was enabled to observe the workings of a living human stomach in nearly all conceivable circumstances. A similar case on record is that of an Esthonian woman, who came under the observation of Drs. Schroeder and Grunewaldt, about twenty-four years ago. Blondlot, and others, artificially produced the same condition in dogs, and thereby gained a certain insight into the behavior of food in the ventral alembic. It was found, for example, that in the fasting state the walls of the stomach appeared pale and flabby, and lie close together, whereupon some people erroneously concluded that the sensation of hunger was due to the rubbing of the coats of the stomach on each other. It was noted that whenever food was introduced the sides of the cavity reddened with the stimulated circulation, and its muscular activity was aroused. As Dr. Beaumont said, from observations made on Alexis St. Martin, the chewed food was churned in the stomach, and carried round and round the course of its curvatures. In this way it was triturated and exposed to the solvent action of the gastric juice, which acted on the albuminous and gelatinous substances swallowed, until gradually a milky fluid, known as chyme, was elaborated. Thus was it ascertained that we take usually about four hours to digest a dinner; that different kinds of food vary much in their digestibility—notably, for example, that fat and oily food take a long time to digest, and therefore require a large expenditure of gastric force; that condiments and spices produced an excitement which impaired the tone and action of the stomach; and that the more finely food was divided, the more readily it could be acted upon and converted into chyme.

THE FEVER COT—A NEW APPARATUS.

THE Fever Cot, as shown in the accompanying engraving, is the invention of Dr. G. W. Kibbee, who has probably had more experience in the treatment of acute disease with water than any other American physician. Being a licentiate of the regular or old school of medicine, he pursued, for a time, the usual routine of drug practice in the treatment of fevers, but becoming dissatisfied with the results, commenced, very gradually at first, the use of cool water to reduce excessive vital heat. The benefit of the cooling treatment became so apparent, that he began to look for the reasons why, and about twenty-five years ago, while treating, with cool

water, a desperate and apparently hopeless case of typhoid fever, he came to the conclusion, from the remarkable improvement that followed the almost constant pouring of moderately cool water over the trunk of the patient, through a folded sheet reaching around the body from the hips to the armpits, that the excessive heat of all fevers converts the impurities in the blood into poison of the same character as that which causes the vital disturbance. Since that time he has treated nearly every form of fever known in the United States on the principle of keeping the vital heat at the normal standard, with perfect success where the treatment commenced at the beginning of the fever, and has saved many cases of typhoid, and other fevers, that had been given up as hopeless under other methods of cure. The recent discoveries, in Europe, that the remote causes of all infectious and malarious diseases exist in an invisible vitalized seed-dust that floats in the atmosphere, and which we take into the blood through the lungs, have given especial significance to the well-understood fact that high temperature causes all the morbid changes in the secretions and excretions of the body in fevers; as the vitalized seed-poisons, when the heat of the blood is a few degrees above the normal standard, are rapidly developed into "living ferments," which, in the language of Prof. Tyndall, "finding lodgment in the body, increase there and multiply, directly ruining the tissues on which they subsist, or destroying life indirectly by the generation of poisonous compounds within the body."

As heat, above the normal standard, is the essential condition for the development of "reproductive parasitic life that is at the root of epidemic disease," cooling the body to the normal standard must be the infallible remedy; and this reasoning is fully sustained by the experience of thousands. Cold is the antagonist of heat, but the cold need not be extreme. All that is required is the constant application of tepid or moderately cool water, by pouring through a folded wet sheet until the heat is reduced to the normal standard, and then holding it there by frequent pouring until the disturbing cause is entirely cast out.

For this purpose, the Fever Cot is a perfectly efficient apparatus. It is constructed by the use of two strips of hard wood eight inches wide, and about seven feet long, having staples screwed to the sides, into which cross legs are fitted. To the upper and outer edge of each side-rail are driven button-nails, to which is fastened the upper bottom of the Fever Cot, a very strong, open material, made for the purpose, entirely pervious to water, and upon which the patient lies. On the outer and lower edge of the side-pieces is fastened rubber cloth, sloping so as to catch the water that comes down from above, and convey it into a receptacle at the foot. The whole framework is so put together that it can be taken apart in a moment and packed for transportation. The head and foot-boards can also be taken out when the Fever Cot is not in use, and it can be folded up and set away where it will occupy but little space. Every part is made in the most substantial manner, and would last for many years in the hospital, or for family use.

A LIGHT WITHOUT FIRE. — We are told that in Paris the watchmen in all magazines where inflammable or explosive materials are stored, use for purposes of illumination a light provided according to the following method: Take an oblong vial of the cleanest glass; put into it a piece of phosphorus about the size of a pea, upon which pour some olive oil heated to a boiling point, filling the vial about one-third full, and then close the vial with a tight cork. To use it, remove the cork, and allow the air to enter the vial, and then re-cork it. The whole empty space in the bottom will then become luminous, and the light obtained will be equal to that of a lamp. As soon as the light grows weak, its power can be increased by opening the vial and allowing a fresh supply of air to enter. In winter it is sometimes necessary to heat the vial between the hands to increase the fluidity of the oil. Thus prepared, the vial may be used for six months.

OUR DRAINS.

Our drains! our drains! our foul, leaking drains!
They poison the air of our streets and our lanes,
In city and suburb, in hamlet and town,
'Neath dwellings and workshops, wherever laid down.
Can reasons still fail young and old to convince
That sewer-gas slaughters both peasant and prince?
How can we have health if the blood in our veins
Is poison'd by breathing foul air from the drains?

Our drains! our drains! our badly made drains!
That give out their smells ere and after it rains,
Sickening the robust man walking the flags,
Prostrating the half-nourished worker in rags;
Swift-stealing through panels where fashion and rank
Sit proudly on cushions, in drives from the bank.
But headache and faintness, and death-boding pains
Go home in the carriage to tell of the drains.

Our drains! our drains! our death-dealing drains!
Choked up, with no outlet for rotten remains;
Chronic hotbeds of typhoid, full of foul silt,
Reflecting our ignorance, proving our guilt,
And showing that we have been riding roughshod
O'er Nature and morals, and maxims of God.
For pure air and water, in cities and plains,
Spell health, if we keep right our dwellings and drains.

—*The Builder.*

MY TWO ESCAPES FROM DEATH.

WHEN a child I was terribly afraid of dogs, but quite an admirer of doctors; but now I have learned to admire dogs, but have become terribly afraid of doctors, for the reasons which I shall detail.

Eight years ago last November (I was then seventeen years old), my brother and I arose early one morning for a hunting excursion. We made a mistake in the time, instead of being nearly daylight, it was about two o'clock in the morning. So we sat in the woods waiting several hours for day to dawn. The weather suddenly changed, becoming intensely cold. We were both chilled; I having the shakes so that I could hardly get home. I was down at once with a severe fever, and the cold settled upon my lungs. The doctor was summoned, the "tongue and pulse ceremony" gone through with, and it was declared that I had "bilious fever," and the usual course of treatment, according to the school, at once began.

I was in bed about six weeks. In the meantime a slight pain began in my right lung and gradually increased. The doctor examined my lungs and declared "no trouble there," and renewed his attacks upon the liver. After a time I was able to attend school, but the pain within grew worse; the hacking cough increased; the face became thinner. A change of doctors had no effect.

By the following spring the pain had become intense in both lungs. Laughing, work, or violent exertion of any kind was impossible. A council of physicians was held, with the conclusion that it was a case of "quick consumption." In answer to the direct question, they expressed their belief that "consumption was incurable," but gave me the consoling thought that perhaps they could retard the inevitable event, and keep me along, possibly, through another winter. Mark this now—there was not at that time a particle of doubt that I had the consumption and was near the end of my days.

A friend and companion of mine, who had had the consumption for years, saw me only a few days before his death, and remarked: "Well, H——, I have got to go, but you will be along the same road soon. We will be together before the summer is over. Medicine won't save you now." Oh, wondrous truth! more true than he who uttered was aware. "Medicine" couldn't save me, but I am alive, and how did it happen? In this way. The physicians said I was past help, and, therefore, I thought it was no use to keep them any longer. During my former illness I had read a book,

"Life in the North Woods," which told how a man given up as a confirmed invalid had gone into the woods and by out-door life and exercise had recovered. I thought I would try something like it. My diet was already quite simple, consisting of rice, eggs, and milk, with a little variation in the way of some good dish which the neighbors would send in (pudding, or meat, or the like), but for which, fortunately, I had not much appetite.

I began a course of bodily exercise. Under an apple-tree back of the house I had a common swing arranged, and also two rings suspended as high as I could reach. My plan was this: Every forenoon I would go out and exercise until I was tired, then lie down and rest thoroughly. In the afternoon I would walk as far as I could without being exhausted; always being careful to make due allowance for the walk home. When I began this course I could not hold myself clear from the ground by the rings, so great was the pain in my lungs. I could only sit and be swung for a few moments. I could not walk around our square, so weak was I; but I kept trying every day, and soon found my strength increasing.

From the first day of the new departure I had not taken any medicine. That was in the spring. Within three months' time I could do any gymnastics that any boy in town could do. I could tramp to the woods and carry a gun for half a day, and before the summer was passed every one believed that I was completely and permanently cured.

But that was not the end. One important thing I had neglected—thorough bathing—and, because of this, the impurities were not all eliminated from my blood. The disease still lingered in its old abode—the liver. With renewed health I became careless again, and had to pay the penalty. Ah, those people who call upon the Lord when they are in trouble, but play with Satan as soon as they get out, are destined to have a hard time of it!

In the following fall I began teaching school, was confined to the house, left off my exercise, and enlarged my diet very indiscriminately. Only a few weeks had elapsed, when, walking on the frozen ground, I slipped and strained the cords in my left knee-joint. Had my system been in good condition, I would probably have recovered at once; but, as it was, this injury became a weak spot through which the impurities of the blood found an outlet and escaped. My knee gradually became more and more painful, and, after a few weeks, began to enlarge and became stiff.

In February I had to leave school, and was put at once in the doctor's charge. I visited Dr. Eastman, at that time the most able and popular physician in Buffalo. He said it was a white swelling, and the chances were small for my retaining the use of the joint. I went home and was put under a course of treatment which will no doubt recommend itself, for I can't do it. Thirty-two successive blisters—and large ones, too—found a lodgment on that poor limb. That didn't work. Then, three weeks of painting with the tincture of iodine—applying it three times a day—a delightful occupation for an invalid; but all to no avail.

In April the climax was reached; both as to the condition of the disease and my opinion of the doctors. An opening appeared on one side of the knee, and the doctors took the hint and lanced the other side. The first day it discharged about a pint of very thick black blood. Then the discharge changed to a yellowish gray matter, with particles of black dust, which showed decomposition of the bone. Then a council of doctors was held, the knee examined and probed, and an act determined upon which was a fitting conclusion to their previous treatment. They decided that inasmuch as the bone was decaying, the only way to save my limb at all was to "take the knee-joint out." Yes, they were going to capture the enemy at one fell swoop; drag him out by force and burn him up. And they favored me with a description of how it was to be done. They "would open the flesh down to the bone for about six inches, cut the bones off above and below," and, presto! they have the whole trouble right in their hands. Well, this sounded very well in theory, but somehow I didn't fancy putting it in practice. In a word, on hearing this

proposition there was war. I told them to go to the d—l, but I was enraged then, and hence, hope to be forgiven for such expressions. They said they "probably knew better what to do than I did. They calculated to do what was best; and, if they were going to be opposed and interfered with, they didn't want the responsibility." I told them to go as soon as they pleased, and I could get along without them. They went, although I am certain they expected to be called back in a day or two.

What did I do? Nothing; that is, I simply assisted nature to do what she had been trying to do so long and under such difficulties. I fed the system with wholesome food, increased the circulation of the blood, and consequently the elimination of waste matter, and the building up of new flesh and bone by thorough bathing and vigorous rubbing of the body. I gave the knee daily a thorough application of soap and water for cleanliness, and "Climax Salve," a patent affair, which I imagined softened the wounds and kept them from healing. I kept the wounds open as long as possible, even lancing them the second time for fear the impurities should not all be discharged. In less than two months the discharge entirely ceased, and the openings readily healed; and to this day (more than six years) have remained so. I have a very fair use of the knee-joint, and, notwithstanding my sedentary habits, have walked ten miles at one time without discomfort.

Since then I have taken no drug-medicine whatever, and have not had one sick day. I have read and profited by the *Science of Health*, and, in most things, have followed its teachings. Even the headaches and summer disorders which used to afflict me are unknown now. So far, in this severe winter, I have not even had a common cold. My unvarying good health is a surprise to my friends, and absolutely unaccountable to my former physicians.

Now, friend reader, do you accept the lessons taught in this sketch? I learned them through suffering. Twice have I journeyed down that pathway which leads to the grave under the guidance of drug-medication, but by fleeing from it and seeking shelter in the beautiful truths of hygiene, have I been saved. And now, of two things I am convinced. White swellings or fever sores can be cured. Consumption can be cured; perhaps not always, and at any stage of progress, but when they are far enough along for any one to know what the trouble is, it is not too late. Air, sunlight, water, exercise, and diet are the things, and the only things that will save. Thousands who are to-day going to the grave by ordinary modes of treatment might return to health and happiness, if they would but choose the right way.

L. H. S.

CONTRASTED LONGEVITY.

THE following statistical deductions are made by Mr. Neison, the distinguished English actuary, and are confirmed by the careful observations of the New York Board of Health. The table below shows the period of years which there is an equal chance or probability of living in persons who have already reached certain ages, viz., 20 years of age, 30, 40, 50, and 60 years respectively in the general population, also in the intemperate. His full deductions read as follows:

Having reached the age of	Has an average chance of still surviving	But the intemperate has a chance of surviving only
20	44.92 years.	15.53 years, or 35 per cent. of the duration of the life of the general population.
30	36.48 "	13.80 years, or 38 per cent. of the duration of the life of the general population.
40	28.79 "	11.62 years, or 40 per cent. of the duration of the life of the general population.
50	21.25 "	10.68 years, or 51 per cent. of the duration of the life of the general population.
60	14.28 "	8.94 years, or 63 per cent. of the duration of the life of the general population.

THE POTATO.--Continued.

BY JULIA COLMAN.

Preservation of the Potato—The Potato Rot—Vivisection—The Potato Beetle—The Sweet Potato—History—Nutrition—Culture—Harvesting.

Recipes.—Paring Potatoes—Warmed Sweet Potatoes—Potato Dressing — Browned Potatoes — Oatmeal Scones—Apple Stew.

PRESERVATION.

PACKING in leaves or dry sand in barrels or shallow bins, and keeping them in a cool cellar of even temperature, a few degrees above the freezing point, is probably as good as any temporary method. But as the growing season approaches, the starch that is in them begins to change into sugar to feed the young shoots, and, of course, the quality of the tuber decreases; usually it loses half its value within a short time at this period. Rubbing off the sprouts is the usual remedy, but this only removes a portion that has already gone from the tuber, and does not prevent the growth of more shoots. It is said that changing their position will so upset the plans of the young shoots, and that not knowing which way to shoot, they will stop growing. This is easily tried if the potatoes are in a headed-barrel and lying on its side.

Others kill the vitality of the tuber by throwing them into boiling water, so that the eyes may be scalded, but the skin not sufficiently scalded to peel.

Potatoes can also be kept out of doors through the winter, either above or below the surface of the ground, under the following conditions: There must be drainage, so that water will not settle around them: they must be covered deep enough not to freeze, yet not deep enough to make them too warm; they must be so covered as to shed rain, and, if there are many, some ventilation from the top must be provided. It is said that if potatoes are buried deeply enough so that they are below vicissitudes of temperature, they will keep over summer and the second winter without deterioration. We know of no experiments in this line that would warrant an extensive following, but the subject is well worthy of experiment; since, for example, only last spring quantities of potatoes were spoiled by the advancing season, which, if they could have been kept through the summer in good condition, would have netted the owners a handsome sum last fall.

Potatoes may also be pared, sliced, and dried like fruit, and kept to good advantage, and with little, if any, more trouble than is required to dry apples. We recommend some immediate experiments in that line, so that people will feel more confidence to undertake it on a large scale whenever occasion may demand.

If, as soon as the potatoes are pared, they are thrown into water, which contains a little harmless acid, such as lemon or lime juice, or even a little white vinegar, it will prevent their turning dark in drying. They should then be sliced thin, and dried quickly, and kept very much in the same way as dried fruit. For our own part, we never have seen any that paid for the trouble of cooking after they were dried, but we know that drying is practiced, and perhaps others may find them more satisfactory. At all events, it is best to practice both, in drying and in cooking them, before making any very extensive ventures in that line. If any valuable discoveries are made we should like to hear of them.

From all this knowledge of the peculiarities of the potato, we may gather a few suggestions for its management in the kitchen, not usually observed. Do not let them stand exposed to the light after they are brought from the cellar, as is often carelessly done. If, for any reason, a few are left after they are brought from the cellar, return them to that salubrious place unless you propose to use them that day, in which case cover them from the light until used. They are always better used fresh than warmed over in any manner, but if the one or two that are left are to stand in some dish, or lie around in some corner until cooked, it might as well be cooked and warmed over. It is still worse to wash up a quantity sufficient to last several days, and use from them as they happen to be wanted, as is sometimes done in small families. No potato should be wet and then dried, if it is to wait but a day before cooking.

All this care about keeping the potato has nothing to do with "the potato rot"—a disease originating in the conditions of its growth, rather than in any disposition that may be made of it after it is harvested. It is a matter that will pay for a few moments' consideration, since it so clearly illustrates the importance of intelligent care in culture.

THE POTATO ROT owes its existence to a plant of fungoid growth, belonging to the same family as mould. Its spores are present in most atmospheric conditions, ready to seize upon any favorable soil for their development. This soil must be some other plant, and that in a sickly condition. It could find no foothold upon a potato plant in a strong and healthy condition. If, therefore, the potato be planted on low, moist lands, or on clayey soil, or if it be strongly manured with animal fertilizers, we put it in the way of a sickly growth, which may result in making it a fit subject for this parasite. Climatic conditions also have much to do with it, and may so weaken plants which have none of the foregoing conditions that they become subject to the pest. The long prevalence of dry winds may do this. It is better to prevent the difficulty than to try to cure it after it has gained a foothold. Keep watch of the vines for a few days after a cold night, or after a heavy rain, and if the leaves curl, or if at any time they show signs of drooping and withering, it is best to apply the preventive. This is plaster, sprinkled on and about the plant. It should be well pulverized and applied when the air is still, a handful or two to each hill. The application may need to be repeated more than once, but it is believed that if continued it will prevent the plague; and there are seasons when it should be done at all hazards. If this would have saved the potato crop in Ireland some thirty years since, it would have been more economical, as well as more merciful, than to send the starving ones food, as we did afterward.

There is reason to believe that if an abundance of ashes is used in fertilizing the ground where it is not already in the soil, as in the case of new lands, the vines would never become so weak as to succumb to the presence of this parasite. Certain it is that potatoes grown on new land are seldom or never troubled with the rot. Equally certain that those highly manured from the barn-yard are extremely liable to it. This indicates the importance of careful attention to the subject of fertilizers. Nothing seems to put the land in better condition for this crop, as indeed we might say for many other crops, than the plowing in of clover, buckwheat, or some similar green crop. If careful experiments in this line should be faithfully pursued, we might yet find out that

barn-yard manure and the cattle to make it are not the indispensable or the economical things that we have been so long taught to consider them.

VIVISECTION.

It has been very stoutly maintained on the part of some that one, if not the principal, cause of the deterioration manifested in potatoes by the late prevalence of the rot, is the cutting up of seed potatoes. It is claimed that this causes the different sorts to run out so that they are not so vigorous as those which are more recently originated from the seed, and that the only way to renew their vigor is to originate new kinds. This, if true, would be a very profitable consideration for the seedsmen, but it is by no means a generally acknowledged fact as yet. The case is very ably and very curiously argued in a little book published by S. R. Wells & Co., entitled "The Model Potato," to which we refer any one who may wish to study the subject. It is agreed, however, that the seed-ends produce earlier and smaller potatoes; so while it will do very well for a small planting in the garden to have a few eyes dropped for seed, the cook will prefer to pare even seed-ends in the sprouting season rather than to be paring small potatoes all the ensuing year. The root ends of the seed are said to produce the largest and best potatoes, but they are also the latest, while those from the middle of the potato are more uniform in size. It may also be noted that very few of the sprouts from one tuber can grow, the weaker ones succumbing in the race.

There is still one thing more we wish to say before the subject of rotted potatoes is dismissed. Diseased tubers are not unfrequently brought into the kitchen. What shall be done with them? We say cut out the parts which are good and use them. Some are afraid of them as poison, but they are quite harmless wherever the roots of the fungus have not penetrated. Within that space they are worthless. The fungus seems to feed on the starch, for under microscopic observation, there are no starch globules to be found in the diseased sections. The growth of the fungus extends rapidly within the tuber, and it also extends to other tubers in the vicinity. This can be arrested by killing the fungus. Soak the raw potatoes partly decayed in a solution of sulphate of magnesia, then spread them in the air, but out of the light, until they are quite dry. The sound portion will, after this, keep very well, but we should not crave it as a dainty.

The ravages of the potato beetle, together with an occasional poor season like that of 1876, combine to make the potato anything but an economical article of diet, especially if we allow ourselves to depend upon it, as most are doing. This beetle came to us from Colorado, where he had been quietly feeding upon some diminutive of the same family. How many more such devouring pests the wilds of the West may yet hold in reserve for us, we know not, but all this suggests the importance of enlarging our dietary by adding all available and desirable varieties. It can not be supposed in view of all this that Providence would have us abjure variety in our food.

THE SWEET POTATO.

Although it has a common name so similar to that of the white potato which has just claimed our attention, it does not even belong to the same botanical family, nor was it named after the other, for although it is less familiar now, it was introduced into Europe and became well known there long before the Irish potato came into common use. Its Indian name, "batatas," gave rise to the common "potato," by which both are now known, although the sweet potato is a convolvulus, and the other a solanum.

It is claimed as a native of both the East and West Indies, though it is not now found wild in either of these countries, nor of any other, so far as we know. We find no traces of it in Ancient, Roman, or Grecian history. It is known to have been among the gifts which Columbus brought to Isabella from the new world, and it was soon after cultivated in Spain, and from there it gradually spread to other parts of Southern Europe. It was also known in England, and is supposed to be the potato of Shakespeare. Now, however, it is rarely seen in that island. An immense English book of well known

authority barely mentions its existence and does not give a single recipe for cooking it. In France it is better known, and much used, especially in Southern France, and many are imported from Algeria. But even there they do not seem to treat them very artistically, if we may judge by Blot's curt treatment, who dismisses them in a couple of lines, as prepared in every way like "other potatoes."

In the United States their importance is constantly increasing, and their use spreading. A few years since, they were a late summer and fall dainty in the New York market, now they may commonly be found until nearly or quite spring. During the past season they have, much of the time, been as low in price as Irish potatoes. They are also constantly creeping further and further North as the peculiarities of their culture are better understood, until now they are raised in the Canadas, and in Maine, as well as in every other State in the Union. At the census of 1870, Vermont raised the smallest quantity, in any one State, which was 96 bushels.

The distinguishing characteristics are quite different in the different sections. In the North, those which are mealy when cooked are preferred; in the South, sweetness is the criterion. The same specimen does not usually excel in both these qualities, since what is starch in the former case is sugar in the latter. Many of the poor and waxy potatoes of the North have not even sweetness to recommend them. In the far South the yam is preferred, which is sweeter, and grows to an enormous size. This is much used in many tropical countries.

NUTRITION.

The main constituents of the sweet potato are starch and sugar. It has by no means received the analytical attention that has been bestowed upon the Irish potato, but it is usually considered much more nutritious, and this estimate is justified by the only analysis I can find. This places its proportion of nutrition at 37 per cent., or half as much again as the common potato. Of course, this varies in different specimens, but it will be observed that this is about the same as that usually assigned to beef, and I venture to say that it would make a much pleasanter meal. It has not been unfrequently noticed in providing for large tables like hotels, that the sweet potato is a very economical addition. People like it and eat freely of it, and then, as one purveyor practically remarked, "They do not eat so much of other things, for the sweet potato is very filling, you know."

This was the one dish that General Marion placed before the British officer, roasted in the ashes, dusted on the sleeve of the negro orderly, served on trenchers of pine bark, and dressed with salt. "It is not often that we are so highly favored as to have sweet potatoes and salt," comments the brave patriot; "we consider them quite a treat, I assure you."

The negroes of the South are extravagantly fond of sweet potatoes, as they are of most sweet things. In one amusing case I once met in Maryland, an old half-superannuated negro would even get up in the night to cook and eat sweet potatoes. The day was not long enough in which to enjoy them.

They seem also to be perfectly digestible and wholesome. Invalids may not be able to partake of them quite so freely as of the Irish potato, but persons in ordinary health seldom find any difficulty in disposing of them. Some of the books tell about their being so purging that many people can not eat them. This they consider due to the same principle as that found in jalap, and some other members of the same botanical family. I confess I have not seen, nor in any other way heard of such cases. If this is the case at the South, we would like to be informed.

CULTURE.

A warm, deep, sandy soil is the delight of the sweet potato, and indispensable to its growth. It will profit by a good deal of fertilizing, and do very well with but little. It does not seem to resent the presence of the stronger manures so readily as the Irish potato, though experiments have not been tried so extensively, and we do not know what may yet be developed.

In the Southern States the tuber is cut in pieces and planted very much as the Irish potato is in the North, but in colder latitudes it is indispensable that the slips be started in artificial warmth. The prevailing custom has been to use a common hot-bed, covering the tubers with four or five inches of soil, and when the slips are four or five inches long, to take them up, remove them from the tuber with what roots may be attached to them and return the tubers to the heat for the production of more slips. In a favorable season this process may be repeated two or three times. In Southern New Jersey, which has of late become a great source of supply for the markets of Philadelphia and New York, they have recently commenced the use of fire-heated beds for starting the young plants, and find them very effective. A small furnace is built in one end of the bed, and tiles are laid to convey the heat and smoke to the other end, where a small chimney perfects the draft. The arrangement is inexpensive, and makes the cultivator much more independent of the weather.

The ground is prepared by deep plowing, and marked by throwing two furrows together and the slips are set along the top of these and about fifteen inches apart, or the furrows are marked across in the same way, and the slips set in the squares thus made. The vines grow rapidly, and, if permitted, are disposed to take root at the joints, where they produce a second set of tubers. Below the frost line this is the way in which they are permitted to grow, and they will thus readily propagate themselves from one season to another. But in the North this forming a second set of tubers detracts too much from the strength required to perfect the first, so the vines must be moved occasionally to prevent this result. In favorable seasons and locations they may be seen trussed up, lying in a bundle on the top of the ridge. This must be, to some extent, detrimental, as it deprives the leaves of no small amount of light and air.

HARVESTING.

The vines continue in leaf until destroyed by the frost. In the South they bear a handsome flower of the convolvulus style, but in the North they seldom reach the perfection of blossoms. In long and warm seasons they mature the tubers sufficiently to keep well as far North as Long Island, but when the season is short or cold, very few of them ripen so far North as that. They are quite easily harvested, most of them coming up readily when the tops are pulled. They should be pulled when the ground and air are dry, and well dried before they are stored. We are not aware that exposure to the light and air injures them, and this is due to the fact that the poisonous principle present in the green parts of the solanum is lacking in the convolvulus.

Great care, however, is required in handling them if they are expected to keep for any length of time. Any slight injury or bruise will be sure to entail decay, as readily as with fruit. Even the rootlets should not be pulled off. They may be placed in barrels or boxes, and kept in a dry place, at a temperature of at least 60 degrees, when, if well matured, they will probably last until planting-time in the spring. In many parts of New Jersey it is the custom to keep the family supply in barrels in the chimney-corner, behind the stove, or in long chests running around the sides of the kitchen, which also serve as seats for the "men folks." In larger quantities they are kept in warmly built root-houses, in which the temperature is kept at 60 degrees by fires, if need be. The success of this plan is attested by the handsome potatoes seen in the city markets in the early spring.

They may be preserved by drying, either raw or cooked. The former has been practiced in the South, but to what extent, I am unable to say. The latter has been practiced at the North in families, boiling, slicing, and drying like fruit, and it is an admirable method of disposing of a lot which does not promise to keep without cooking. In our next we shall conclude our remarks on this esculent and related tubers which are used as food.

RECIPES.

PARING POTATOES.—It is much neater, pleasanter, and more economical, to pare potatoes out of water, or to wash them before paring, than to pare them dry. It avoids the gritty feeling of the dry, dusty tubers in the hand, the transfer

of much of this dust to the pared potato, the stain of the undiluted juice of the potato on the fingers, and they are more likely to be pared thin. This last item is one of much importance, since the best part of the tuber lies near the skin, and with the wasteful method of paring often practiced is lost. All imperfections and every particle of skin should be removed. If the eyes are deep, they must be dug out with the point of the knife, since paring them out would necessitate much waste. This shows the advantage of tubers with shallow eyes, since it often requires more time to dig out deep eyes than to pare the rest of the potato. A thin, small shoe-knife is the best instrument for paring potatoes with which I am acquainted.

WARMED SWEET POTATOES.—If baked, they may be simply laid in the oven in their skins, and warmed through, say in ten minutes. They are thus sometimes almost as good as when fresh. If boiled, they should first be peeled and then warmed in the same manner, or they may be sliced and browned on a griddle, or in a frying-pan, oiled barely enough to prevent sticking. Cover them, and warm quickly to prevent their drying up. Carry to the table on a hot dish, covered with a napkin.

POTATO DRESSING.—Those who would enjoy the best of a potato should eat it without any dressing. The most agreeable, wholesome accompaniments are pease, beans, lentils, stewed tomatoes, apples, dried or fresh, prunes, and indeed most other stewed fruits. Oatmeal porridge is not bad, and small bits of a potato may be cooked in oatmeal gruel with a little chopped onion to good advantage. The next best thing is milk gravy thickened with graham flour, sifted, if the bran is not cut up very fine, or an egg cooked soft in hot water, without boiling.

BROWNED POTATOES.—Peel cold, boiled potatoes, and slice, neatly, one-fourth of an inch thick or less. Lay each slice flat upon a griddle, or the bottom of a frying-pan, barely rubbed over with an oiled cloth, so that they will not stick; even that will not be necessary, if it be very smooth. Cover closely until brown on one side, then turn and brown on the other, covering again, to prevent their becoming dry and hard. Mashed potatoes may be neatly sliced and browned in the same manner. Serve warm. They are very palatable and wholesome.

OATMEAL SCONES.—Cold or warm potatoes, peeled or mashed, may be worked up with Canada oatmeal, or Schumacher's "A," preferably the latter, until it can be molded with the hand into small, thin cakes, half an inch thick, and baked as above, on a griddle, in a frying-pan, or in the oven. These scones may also be molded with Graham flour, and a small proportion of turnip or boiled cabbage may be worked in. A few shreds of parsley are by some considered an addition, and, as well, as a "suspicion" of onion.

APPLE STEW.—One very small onion, finely-sliced, one large sub-acid apple, and two medium-sized potatoes, all pared, water enough to cover well, and one spoonful of crushed barley or fine oatmeal. Boil until the potatoes are done, pour over some bits of bread, or serve without; no other seasoning required.

RECORD OF SCIENTIFIC DISCOVERY.

Fresh Relics of the Mound-Builders.—In October, last year, a party of explorers made some very interesting discoveries in the neighborhood of Milton, Wisconsin. There are there a number of mounds which recent archæological investigation has referred to that mysterious race which inhabited the central portion of North America long before the present aborigines appeared. Selecting the largest of these mounds, the explorers dug a trench from the outer edge to the center thirty feet long, five feet wide, at the center attaining a depth of ten feet. About a foot from the bottom at the deepest part of the excavation, a layer of ashes and decayed wood was laid bare. A few inches below this was a hard deposit resembling mortar, and beneath were found the remains of four adults and two children. That they belonged to the race of mound-builders is inferred from the fact that there had previously been exhumed, only eighteen inches below the surface, a complete skeleton.

But the more important relics were eight and a half feet lower down. The first of these, the skeleton of a man, lay with the head to the west in a reclining position. At his knees were two ornaments, composed of the teeth of some wild animal, about four inches long, and having holes bored through for the string which attached them to the wrists. Close by was the skull, but so badly decayed as to prevent removal. A little to the south of the skull were four perfect flint arrow-heads, as clearly cut as if the work had been done by the best modern machinery. Lying around and under the shoulders were twenty-nine beads, manufactured from small shells, and perforated so as to be worn as a necklace. Evidently this was the skeleton of some famous personage, for among the bones of the five others no ornaments whatever were found. The chief's companions were arranged about him to the west, northwest, and east. In the jaw-bone of one was a partly devcloped wisdom tooth, and most

of the jaw-bones and teeth were in good preservation.

A New Insect.—Mr. Fairfield presents in the following drawing, from the field of the microscope, magnified 800 diameters (640,000 times), a cut of a hitherto unknown insect, found in the brain and abdominal tissues of the common house-fly. He has in his possession, mounted for observation, six specimens out of the more than thirty observed during a single dissection, besides a large number of ova and of embryons in different stages of development.

This little animal—the most minute of all the insects thus far discovered—is, in the mature state, about $\frac{1}{100}$ of an inch in length, exclusive of the legs, by about $\frac{1}{300}$ of an inch in breadth. That is to say, it is somewhat smaller than the larger animalcules found in stagnant water; but has four pairs of fully-developed, four-jointed, insect legs; a pair of three-jointed antennæ (feelers) terminating in minute hairs, and the usual permanent insect organs. It feeds by means of a couple of sucking disks, which appear to communicate with each other through a minute canal, each disk having, however, a special tube that leads backward to the minute digestive sac. This sac is scarcely larger than an ordinary white blood-corpuscle. The dorsal surface (back) resembles that of the *Argas Americana*, as figured by Professor Packard, and is an elongated convex surface of irregularly-disposed cells, without definition into cephalic and thoracic sections. In its embryology the insect passes through a monad stage. The egg first becomes granular and nucleated; then it puts forth a minute process. Presently it becomes double-nucleated, elongates, and shows a disposition to propagate by self-division, exactly after the manner of a monad; but, at a certain stage, this tendency to division ceases, and the anterior cell becomes a center of development for the anterior organs of the animal, while the posterior becomes a hollow cavity, and gives origin to the first pair of legs. The tail contemporaneous with these changes, thickens and shows a longitudinal striation, as if dividing into four tails, which, however, subsequently assume the consistency of two pairs of four-jointed insect legs. The anterior pair of legs and the antennæ are developed by budding. The animal has no eyes, but is copiously provided with minute hairs, after the usual manner of the insect type. I will not discuss that question in a mere note; but I believe that the entomologist has been the proper progenitor of that numerous family known as acaridæ, of which the sugar mites are familiar representatives, and that the long-sought connecting link between monads and insects is at last discovered. The feet, not exhibited in the cut, consist of three claw-like processes, connected (I think, but am not yet certain) by their films of transparent tissue.

F. B. Meek, one of the most eminent paleontologists of the age, died in Washington last year. His great work, the Paleontology of the Upper Missouri Region, one of the final reports of Hayden's United States Survey of the Territories, has appeared. He was a voluminous, but critical and careful author

A Burning World.—On the 24th of November, Dr. Schmidt, of Athens, observed a new star of the third magnitude; it was near ρ Cygni, where no star larger than the eighth or ninth magnitude was previously known. Unfavorable weather greatly interfered with its continuous observation; but some interesting results have been reached, notwithstanding. By December 6th the star had fallen in brilliance to the fifth magnitude, and by the 12th was barely visible to the naked eye. On the 20th, Dr. Peters, of Hamilton College, reports it as of the seventh magnitude, therefore only telescopic. It must have burst out very suddenly, and faded almost as rapidly, like the star which in May, 1866, appeared in the Constellation of the Northern Crown, and in ten days slipped down from the second magnitude to the sixth (it is now of the eleventh, according to Hind). It will be recollected that the star of 1866 was observed spectroscopically by Dr. Huggins, and indicated the presence of incandescent hydrogen, by the so-called reversal of the hydrogen lines—*i. e.*, these lines, which are ordinarily *dark* in the spectra of stars and in that of the sun, showed *bright* upon the less luminous background; just as sometimes happens on portions of the solar surface in the neighborhood of spots. The new star also exhibits a similar spectrum. It was observed on the evening of December 2d, at Paris, by Cornu, who found in its spectrum no less than *seven* bright lines. Three are the well-known lines of hydrogen, while the others indicate sodium, or helium, magnesium, and phenomena, analogous to solar incandescence. Opinions agree that the metals and vapors which are the most conspicuous in the solar eruptions

are precisely those which characterize the spectrum of the star. But, while in the case of the sun the increase of his brilliance due to such eruptions is quite imperceptible, that of the star is enormous. On the 24th of November it was more than forty times brighter than on December 20th; and if its original brightness placed it in the ninth magnitude (and it seems quite certain, from examination of the star catalogues, that it could not have been larger), its brightness at the maximum was more than three hundred times greater than its ordinary luster. In the case of the star of 1866, the whole range from the eleventh magnitude to the second was more than eight times larger yet. In the case of the sun the cause, whatever it may be, is evidently internal. Probably it is the same with the star. And yet this is not certain. Collision with some inter-stellar mass might perhaps produce a similar effect and set "a world on fire." The right ascension of the star, according to the careful observation of Mr. Hind, on December 12th, is 21h. 36m. 50.4s, and its declination 42° 16′ 56″.

Leverrier's Supposed Intra-Mercurial Planet. — Writing of the supposed new planet within the orbit of the planet Mercury, the Astronomer Royal, of England, states positively that the spot on the sun, observed and photographed in April last, was unquestionably an ordinary sun-spot which lacked the usual penumbra or shadow. The object was very black, considerably more opaque than sun-spots usually are; but as observations taken at Madrid sustain the statement of the English functionary just quoted, Leverrier's view must be regarded as unverified. In justice to the eminent astronomer, it must, however, be conceded that he did not definitely assert that certain observations of what were supposed to be solar spots were really observations of an intra-Mercurial planet, but only that such might prove to be the case on careful investigation. Nor did he definitely predict the transit of such a planet early in October, as has been stated by numerous scientific journals, although he has intimated his belief in the existence of such a body, styled Vulcan, having a revolutionary period of about twenty-eight days. He believes, in his later utterances, that the orbit of this body is a highly eccentric one, and that, like Venus, Vulcan makes two transits within a few years of each other, and then intermits its passage across the solar disk for about a century. He calculates its distance from the sun to be rather less than one-fifth of the earth's distance, or about 18,000,000 of miles. W. G. Wright, of San Bernardino, California, writes to the *Scientific American*, of this city, under date of October 24, 1876, that he verified the transit of Vulcan at 3 P.M. on that day, having a clear, unclouded afternoon for the observation, and employing a very efficient four-inch lens. He observed the phenomenon for two hours, during which the planet traveled about one-sixth of the distance across the disk. Judging from his diagram, it must have entered the solar disk about 7 A.M., and left it about 8¼ P.M., occupying about 13¼ hours in the journey. He telegraphed to Professor Davidson, of San Francisco, to look for it, immediately after making the first observation, but the professor appears to have been unsuccessful. By reference to a little article entitled "Star-Ghosts," prepared for this record, and printed in the November number of the PHRENOLOGICAL JOURNAL, the reader may obtain the probable explanation of Mr. Wright's diagram, unless he is an extremely cautious observer, a hypothesis which his hurry to publish by no means appears to warrant. The date of October 24th is, however, within the period prescribed for the transit by Leverrier. The preparations that M. Janssen is making to have the sun photographed every hour in the day during the year 1877, will probably have some effect in determining the question started by Leverrier; for transits of such a planet must necessarily occur frequently in the coronal region of the sun, if such a body, having a period of 24, 28, or 33 days, as the case may be, really exists within the orbit of Mercury; since it must always be, as concerns terrestrial observations, very near the solar photosphere, and often actually within it. The evidence is of a nature so conflicting, and Leverrier's statements themselves are so variable in their tenor, that, for the present at least, it is as impossible to come to any definite conclusion respecting Vulcan as it is respecting the still warmly-affirmed, but as persistently denied, moon of the planet Venus, alluded to in our article on "Star-Ghosts."

Antidote for Prussic Acid Poisoning. — M. Gautier has recently laid before the medical world the results of important observations as to the effect of prussic acid upon animal and insect life. His process was to poison rabbits by injecting a solution of the drug under the skin, and to leave them until apparently dead; then to establish an artificial respiration, employing, for experiment, a volume of air impregnated with chlorine vapor. In each case, although several minutes were permitted to elapse after the animal had ceased its struggles and was apparently dead, he was successful in restoring the suspended vitality, and bringing the rabbit back to life. Later experiments with insects were equally successful. On the strength of these experiments, physicians may possibly feel justified in testing the effects of chloroform in prussic acid poisoning, either by inhalation, or by following the acid, as usually taken, with a moderate dose of the anæsthetic.

An Efficient Disinfectant. — According to the *London Lancet*, no better agent could be used than the bisulphide of carbon, which on ignition involves sulphurous acid in vapor. The substance is not costly, and may be burnt either in an ordinary spirit lamp or in an open dish. It should be used with caution, as it is extremely inflammable.

Mrs. C. Fowler Wells, *Proprietor.*
H. S. Drayton, A.M., *Editor.* N. Sizer, *Associate.*

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SPECIAL APTITUDE.

ONE of the applications of practical phrenology is to the determination of individual capability as a worker in the world's broad field of industry. This phase or department of the science is regarded by the many as inferior in importance to no other. And the professional lecturer and examiner is met on all sides by the eager inquiry, "What am I fit for?"

Now it is this very specialty which has brought upon the science and its advocates most of the criticism and ridicule of opponents; the reason alleged for such opposition being that it was not within the province of man to assign particular aptitudes to individual minds; that he who claimed such ability was a knave and charlatan self-declared.

Phrenology in answer pointed to the thousand examples of successful endeavors in men and women, past and present, whose organization thoroughly corresponded with the tenor of their respective mental manifestation in relations to the pursuit each had chosen. Phrenology also pointed to the influence of parentage upon organization, and traced its bearings upon the practical life, showing how the mental tendency in a given case could not be otherwise than a direct operation of the natural and divine law that declares *like produces like.*

On this subject we can now quote an eminent authority of the day, Mr. Francis Galton, who has recently published a volume on the antecedents of English men of science. To insure accuracy in the discussion of his subject, Mr. Galton made use of sending to each scientist from whom it was desirable to obtain data, a series of questions. One hundred and eighty scientific men were thus questioned, and the replies which most appeal to the thoughtful are those relative to prevalent tastes.

The *Scientific American* comments thus upon the returns which were made:

"We should expect to find a taste for mechanics among the physicists, and such is the case: the same among the mechanicians and engineers. The underlying cause of scientific research may be traced in the repeated mention of the possession of a 'desire to know facts,' curiously coupled in some cases with a strong repugnance to works of fiction. More interesting, however, is the schedule of influences and motives which urged the various individuals to follow scientific pursuits. Out of 191 people, innate taste for their calling influenced 59; fortunate accidents (generally showing innate taste), 11; indirect opportunities and indirect motives, 19; professional influences to exertion, 24; encouragement of scientific inclinations at home, 34; influence and encouragement of friends, 20; of teachers, 13; travel in distant regions, 8; residual influences, unclassed, 3. The large plurality in favor of innate taste is striking. Now take the various callings: Out of 26 cases of physicists and mathematicians, 12 had an innate taste, 1 no natural taste at all, and 7 are doubtful; of 11 chemists the taste of 5 was innate, 1 not, and 5 doubtful; of 8 geologists, 7 innate, 1 doubtful; of 24 zoölogists, 17 innate, 3 not, 4 doubtful; of 10 botanists, 8 innate, 1 not, 1 doubtful; of 7 medical men, 2 innate, 4 not, 1 doubtful; of 6 statisticians, 3 innate, 1 not,

2 doubtful; of 5 mechanicians, 2 innate, 3 doubtful.

"It is clear from this that a strong and inborn taste for science is both a prevailing and an enduring peculiarity of the persons considered. A fair estimate for Mr. Galton's deductions is that out of every ten men of science, six were naturally gifted with a strong taste for scientific pursuits. Not one person in ten, taken indiscriminately, possessing such an instinct, it follows that its presence must add five-fold to the chance of scientific success.

"The possession of a special taste for any pursuit is, therefore, a gift of nature not to be slighted, and it is, in fact, something to be seriously studied and its development advanced."

Our contemporary is candid in the admissions of the last two paragraphs. And the phrenologist would claim no more than the conclusion, that as compared with men of unfavorable organizations, he who possesses a natural endowment for scientific pursuits would have "an instinct," whose "presence must add five-fold to the chance of scientific success."

SCIENCE IN RELIGIOUS THOUGHT.

THE general principles of phrenological science have become so much distributed in the literature of the day, that it has ceased to be a matter for comment when a clergyman or lecturer introduces them in his discussion of moral or physical phenomena connected with human life. It is not often, however, that we find a minister bold enough to apply those principles in a technical way in reasoning upon the highest subjects which, as an esthetic and religious being, man is called upon to consider. Mr. Beecher may introduce a definition or two from the phrenological classification for the purpose of rendering his meaning clear when speaking of the weakness or strength of human character. Mr. Platt may point out the special impropriety of admitting vicious influences in the training and habits of children, and may show how parental negligence entails suffering and misery upon posterity; but these gentlemen do not go so far as a much-talked-of Boston divine, Mr. Joseph Cook, in scientific exposition. From the published report of a recent sermon, delivered in Tremont Temple, on the question, "Does Death End All?" we quote a few paragraphs:

"Wherever we find heat, light, electricity, we find motion of the particles; wherever we find motion we find pressure; wherever is pressure is will; and here we stood on the threshold of the eternal. It had been found that the brain when electrically stimulated gave certain physical motion; that the application to different parts of the brain produced different motions; the doctrine of the localization of function in the brain was thus placed beyond dispute.

"By operating upon the brain of a rabbit we had found that the brain was a keyboard, the stimulation of one part producing the motions of fear, of another those of joy. But it had been found that the frontal lobes were independent of these efforts of electric action. The posterior lobes of the brain answered automatically, but the frontal lobes, which had been assigned generally as the seat of the intellect, were not automatic.

"Take away one-half of the brain and the body is paralyzed on one side, but the mind will often act wholly and perfectly when the half has been removed, and mental operations may be carried on completely when but one hemisphere is left, and although they might not be as vigorous as before, those operations of the mind were still complete."

From points like these Mr. Cook argued that "the power which controlled was not physical, and that the relation of the soul to the body was that of a rower in a boat, of a player and his harp. Hence the destruction of the boat does not destroy the rower. If death did not destroy the soul, what, then, could?

"He did not expect to prove immortality by science, but if science and reason removed all objections to the fact of immortality, why should we not accept the teachings of revelation?"

We infer from the statement of the second paragraph we have quoted, that the frontal lobes are deemed by Mr. Cook to be the instruments of that noble, special principle which we term mind, *per se*, the rational thinking element. To it he imputes a super-physical quality, because in part the instruments of science, urged by the subtlest and most tremendous power known to man, fail to awaken a response. He may be right with regard to his conclusion as to immortality; at any rate, in our opinion, science furnishes him with data for his argument in that behalf, as much as it does Mr. Darwin for thinking that animal organisms are derived from vegetable.

THE PROBABLE SETTLEMENT.

THE effort on the part of Congress to arrange for a settlement of the complex matter of the electoral vote has developed sentiments in high political circles at Washington which have much of encouragement for all whose sympathies for the welfare of the nation are above parties and personal ambitions. We have the spectacle of eminent men of Democratic and Republican affinities laboring together in amity for the resolution of some of the most serious questions which have yet arisen in our State and national procedure. We see statesmen like Messrs. Thurman, Frelinghuysen, Bayard, Conkling, Edmunds, Garfield, earnestly discussing the plan submitted to Congress for the extrication of the national government from a perilous contingency, and coincidently to relieve the country of that anxiety for its political future which has so much embarrassed commercial affairs. Whether the measure resolved upon by the Committee be constitutional or unconstitutional, the question which many partisan legislators and writers seem chiefly to be concerned about, is to us not so important as its power to adjust the difficulties of the hour with fairness and success; and we think that the gentlemen selected as the Committee appreciated the grave nature of their duty and have given in their reported plan the measure deemed most likely to be satisfactory in general result. That it does not suit many of the professional politicians, is a point in its favor, and seems for that as a chief reason to win extended popular confidence.

DO WE INTRUDE?

AMONG the social qualities of American people which the foreigner notices in the outset of an acquaintance with our domestic life, because of their contrast with the manners of European society, is the disposition to be free, easy, and communicative with regard to all matters; not excepting those even of a strictly personal nature. So marked is this disposition in some circles, that a quiet reserve is regarded with manifest displeasure, and one is expected to exhibit whatever he may possess for the inspection of visitors. Calls are made frequently for no other reason than to see and inquire about the new piano, suit of furniture, dress, or horse a neighbor may have purchased, and the owner evinces a ready pleasure in parading the acquisition, and listening to the speculations of his visitors with reference to its quality, cost, and adaptation.

To the high-bred foreigner such conduct appears grotesque and immodest, but he usually attributes it to our lack of culture and refinement. He deems affairs of a strictly personal nature as quite out of the range of common sociality, and resents any

intrusion upon them as a violation of personal right. It seems to us that a delicate sense of propriety would debar one from entering the private room of a friend, unless by his or her invitation, and in his or her company. A dozen good reasons will suggest themselves to any thoughtful mind for such reserve; and surely none but those whose tutoring in matters of taste has been of that miscellaneous and incongruous sort prevalent, perhaps of necessity, in many of our half-formed rural settlements, would think of disputing the right of every one to personal retirement and the seclusion of what is simply of private interest. We know, and it is altogether likely that the reader can call to mind, people whose robust curiosity leads them to extremes of inquisition into the affairs of others; and who will sometimes be guilty of downright impertinence, without the consciousness, apparently, of infringing upon the rules of decency, and doing an injustice to another.

A case in point is that of a friend, who related to us the substance of a call she had made at the house of an acquaintance. The latter was not at home; but, nevertheless, the visitor went into the parlor, and amused herself for a while in examining the books, pictures, etc., there; then stepped into a side room and scrutinized its appointments, the servant of the house meanwhile awaiting the caller's leisure. Seeing a book of which she had heard lying on a table, she picked it up, and remarked, that she "guessed she would take it along, and the servant could tell her mistress who had it, as she wanted to read it," and suiting the action to the word, left the house. To our mind, no degree of familiarity excuses conduct like this, and we could not think it possible of one whose intellectual and esthetic sentiments have been developed and trained under judicious guidance and association. Intimacies that are cordial, genial, confidential, are delightful, but they are not productive of much advantage to the persons interested, if there be associated with them the qualities of obtrusiveness, inquisitiveness, and presumption. We can imagine that the man who asked to be "saved from his friends," was socially related to people who deemed it their privilege to ransack his house, and occupy his time whenever the whim seized them. No healthy social order can grow out of a condition in which the elements of promiscuous familiarity are permitted to become well-rooted in the customs of the people, for they are antagonistic to the essential principle of true home-life, privacy, and without true homes we can not make a community whose existence shall be permanent, and whose morality shall command universal respect.

NO WONDER!

HOW very few of the thousands who complain of "hard times" realize that the chief causes of our business and financial distress consist in our toleration, as a people, of indiscreet and expensive habits. Statistics show that we pay for articles not only altogether unnecessary for our comfort, but positively injurious to health of body and mind, hundreds of millions of dollars; indeed, many times the absolute cost of proper food and clothing. Let us look at some of the items. Cost of tobacco and cigars during a year, $610,000,000; importations of liquor, $50,000,000; support of grog shops, $1,500,000,000; cost of supporting criminals, made such by rum, $12,000,000; fees in prosecuting the cases of such criminals, $35,000,000; cost of keeping dogs, $70,000,000. A people that can spend money in this profuse fashion ought not to complain of "hard times!"

But we could enumerate a score of other ways in which money is squandered, which would double the above grand aggregate.

GENERAL WARREN'S SKULL.—Among the "antiquities" which attract notice in the old South Church, Boston, is a portrait of General Warren, and below it photographs of his skull in three positions. The interest attaching to the skull views, we take it, is mainly of the phrenological sort, as scarcely any other scientific motive could have induced such an exhibition. We have not seen the photographs, and can only conjecture with respect to the positions—that they show the frontal, side, and horizontal contours of the distinguished patriot's cranium. Perhaps some Boston friend can furnish us data from a personal investigation. The student of character may find these photographs serviceable in forming an estimate of General Warren's traits of disposition and talent.

Our Mentorial Bureau.

[In this Department will be noticed such matters as are of interest to correspondents and to the general reader. Contributions for "What They Say" should be brief, pointed, and creamy, to secure publication.]

To Our Correspondents.

THE PRESSURE OF OUR BUSINESS IS SUCH *that we cannot undertake to return unavailable contributions unless the necessary postage is provided by the writers. In all cases, persons who communicate with us through the post-office should, if they expect a reply, inclose the return postage—stamps being preferred. Anonymous letters will not be considered.*

QUESTIONS OF "GENERAL INTEREST" ONLY *will be answered in this department. But one question at a time, and that clearly stated, must be propounded, if a correspondent shall expect us to give him the benefit of an early consideration.*

IF AN INQUIRY FAIL TO RECEIVE ATTENTION *within two months, the correspondent should repeat it; if not then published, the inquirer may conclude that an answer is withheld, for good reasons, by the editor.*

DEVELOPMENT OF INTELLECT.—K. D.—We are not aware that in metaphysical science, outside of Phrenology, there is any well settled system of the development or appearance of the different intellectual faculties in the life of the individual. In Phrenology it is understood that the faculties primary in growth are those which relate to alimentation and the development of the body physically. Capability of discriminating between objects or things comes next. The child grows in great part in its early life through imitation; therefore that organ stimulates the intellectual faculties in action. The reasoning powers come into play later. In some brains the inheritance of reasoning capacity is large, predominating even over the perceptive sense. In such persons this department of the intellect is early manifested; while in those in which it is moderate by inheritance, maturity of reflection may not be reached until adult years. The organ which seems to stand out prominently in the primary stage of reason is Comparison. Causality, or the logical faculty, comes later.

ARRESTED NERVOUS DEVELOPMENT.—M. J.—We are of opinion that little, if anything, can be done to improve the case which you have mentioned. The brain itself is defective, and the nervous phenomena correspondingly so. The case is a very interesting one for the phrenologist. The heavy look you speak of, indicated by the eyes, shows that the brain lacks correlation of faculty with faculty, and with the physical forces. We are of opinion that the defects lie mainly in the frontal lobes; Language being one of the organs affected.

ALCOHOLIC STIMULUS.—L. G. P.—*Question:* Can you explain why it is that alcohol appears to excite the smallest organs chiefly?

We can not explain it, neither shall we attempt to do that which is quite impossible. The facts and phenomena of alcoholic excitement show that the stronger organs of the brain are chiefly stimulated. "The timid become courageous," for the reason that the basilar organs are aroused to an unusual degree of activity under the ethylic stimulus. A man may have a good degree of Destructiveness, yet a *larger* degree of Cautiousness, and so appear irresolute and hesitating; but under alcoholic excitement, aroused De-

structiveness, coupled with awakened Combativeness, may give him force and energy such as were not apparent before. Such action, however, is but spasmodic, even in the drunkard, and its results usually injurious.

SUPERFLUOUS HAIR.—BOX 132.—No; we can not advise any method by which superfluous hair can be totally eradicated; unless it be burnt out by a red-hot iron—skin, roots, and all.

SHORT-HAND WRITING.—J. H. R.—Send for our Circular on Phonography. A stamp inclosed will secure it. Most questions arising in the mind of one contemplating the study of short-hand are answered in such circular. Portraits of the evangelists, Moody and Sankey, were published in our ANNUAL for 1876. Price, twenty-five cents.

LAW AND PROVIDENCE.—W. I.—We must acknowledge our inability to explain the matter concerning which you inquire. There is such an infinity of comprehensiveness in the subject that we feel altogether inadequate to the discussion. We believe in the goodness of God—we can not help it; so many things are occurring constantly in society, in our own personal life, which force upon us the conviction that we are watched over by a most beneficent Providence. Nevertheless, when we look into nature we find laws operating certainly, positively—effects following causes with unerring directness; in the operation of those laws we see a creative Hand, an infinite wisdom, and we feel that we are not inconsistent in believing that this infinite Hand has adapted the laws of nature in their variant operation to the needs of man.

STUDENT AT COLLEGE.—W. M. Y.—Your questions are answered in great part in the article entitled "Letters to a Son in College," No. 3, in the present number. As the letters proceed from month to month you will doubtless find many matters of inquiry which suggest themselves to you fully answered.

EYE-SIGHT AND SAND-DUST.—J. R.—We warn you against making use of any of the contrivances advertised by speculators and sharpers, as you would rue the hour when you experimented upon yourself with them. Better throw away your money than invest in the things. Sand-dust is injurious to the lungs; so are all flying particles of a hard, crystalline nature.

ITCHING.—E. A. C.—You doubtless have a very sensitive cuticle, coupled with a morbid blood condition. We would advise you to use water freely in bathing. The method of the sponge-bath would be most serviceable, followed with a brisk towel and hand-rubbing. Use meals which are well prepared. People who eat coarse, roughly, imperfectly prepared grades of oatmeal and wheat-meal may experience more or less discomfort in the way you complain. The oat-grain and the wheat should be thoroughly cleaned and divested of its exterior woody-coat before it is ground up or prepared for the table.

MAN'S NEED OF THE LOWER ANIMALS.—A subscriber asks: "Can you tell me, if all animal food were eschewed—begin, say with the article of beef—what we would do for shoes if it were not for the hides, from the calf up? And for the making of them my shoemaker tells me it would be next to an impossibility to get along without the apparently trivial article of bristles, which is taken from the hog. My laundress tells me it would be *impossible* to get along without soap. A very necessary ingredient is animal fat to manufacture it; and various other uses are made of it—oiling machinery, etc. Next take the sheep. No one in this climate would question the utility of the fleece on its back. The question is, would it pay to raise them for wool alone? There might be much more adduced as to the utility of the different products of the many different species we subsist on; but as I have never heard of utilizing the flesh only as an article of diet, I doubt if it could be raised otherwise without pecuniary loss. If cattle were not slaughtered, what would prevent an over-population of the earth?"

We have not the space to give our friend a full discussion of this weighty subject. As regards leather, we infer that the use of leather for shoes is injurious rather than beneficial to the human foot. We have been told so by more than one respectable shoemaker. The ancient sandal is better adapted for healthful development than the close, rigorous boot or shoe. Invention has developed substitutes for leatner made of vegetable material—leatherette, for instance. We imagine that for bristles, were the attempt made, many vegetable products might be found equally serviceable. In the tropics, fibres of the palm are used for a great variety of purposes. As for soap, the best sort is manufactured from vegetable oil. Chemists are finding matters for sanitary objection in the manufacture of soap from animal fat nowadays. They claim that many cases of skin disease arise from the use of such soap. Lubricating oils are obtainable from other sources than animal fats—witness castor and mineral. As for sheep, we take it that statistics will show that sheep are raised and kept more for their fleeces than for their flesh and skins. We are of opinion that for uses which expediency or necessity creates, it would not be inconsistent with hygiene to raise and keep animals. We think that there would be a vast saving of territory for agricultural uses by the reduction in their numbers, which would follow from re-

linquishing flesh as an article of diet. It is said that a given amount of land devoted to the raising of cereals will sustain eight times as many human lives as the same amount of land devoted to the raising of cattle for food. This in itself is a very powerful argument against flesh eating from the side of economy, and should please our Malthusian friends.

AUTHORS ON HISTORY.—J. V.—"Prospect Grocery." Your letter contains no definite address, hence we answer here. Among the best standard works are: Robertson's History of America—Discovery and Settlement; Bancroft's History of the United States; Greeley's American Conflict. A later work on the Civil War, by a French writer, is highly credited. We can supply all mentioned.

VITATIVENESS.—Please give a definition of the term "Vitativeness," as I do not find the word in Webster's Unabridged Dictionary.

Answer: The term comes from the Latin *Vita* —life; and signifies love of life, dread of death; and its activity tends to prolong life by inspiring the person to do that which will promote life and stave off death. Many a person has recovered from severe illness or injury, being braced up by the feeling "I can not die; I must live."

Several questions await consideration in the next number.

What They Say.

BE THOROUGH.—If there is one idea I would impress upon the minds of those now preparing for the great battle of life at the seeming expense of others, it would be the idea of thoroughness, for all other ideas are intimately connected with it, and without it all other ideas go for nought. The student, whatever may be the subject of his studies, who commences with the determination to know all there is to know of them, has gained a victory already that will lead him on to final success and the victor's reward.

The person who only knows a subject partially, is at sea on that subject so far as the utilization of his knowledge is concerned, and the habit of examining a thing superficially only, is of such insidious growth that ere a person realizes the fact, he is securely committed to it, and the breaking up of the habit is so difficult and tedious, that it is rarely accomplished.

We all admire perseverance in others, and any one who starts out with that as his talisman, need not fear as to the reward even here, to say nothing of the capabilities of a thoroughly cultivated mind for enjoyment hereafter. The time to begin is in the beginning of his preparation, and whatever may be the aim of the student as to a profession, whether the information may be of use in this or that department of life, learn all you can of it.

Cultivation of intellect is what you most need now, and you can get the business or professional education afterward.

The one great need of this country is thoroughness. All students skim too much, consequently many foreign-born and educated men reap the reward that ought to belong to Americans. Older countries demand a more thorough education for their youth. Our people need and should demand a more thoroughly educated class of men as teachers; they can obtain them.

M. C. SIM.

"FLESH AS FOOD.—What part do animals play in the great economy of nature? Why do the fish swarm in our rivers?"

We find in the Bible that permission to kill animals, such as are necessary for our food or when they endanger our existence, was first granted, immediately after the flood, to Noah and his descendants. To take away the life of any sensitive being, and feast on its flesh, seems incompatible with a state of innocence; and, therefore, no such grant was given to Adam in Paradise; nor does it appear that the antediluvians ever feasted on the flesh of animals. It seems to have been a grant suited only to the degraded state of man after the deluge; and it is probable, that as he advances in the scale of moral perfection, the use of animal food will be gradually laid aside, and he will return to the productions of the vegetable kingdom as the original food of man, and as best suited to the rank of rational and moral intelligence.

Animals have probably been placed upon the earth, as it is capable of sustaining them, for the contemplation and enjoyment of man and to make his means for knowledge and happiness more ample. Our knowledge of life would not be so extensive, our means of adaptation so ample, nor would our idea of the Omnipotent Author be so comprehensive, if there were but one order of animal being—man.

The astronomer finds food for the expansion of his powers, in contemplating the operation of the law of gravitation, which reaches to all the stellar systems throughout the boundless regions of space. How little, indeed, were the science of Astronomy, if the astronomer were confined in his research to a single planet! How much more limited our knowledge of Botany, if confined to the study of a single species of plant! or of Zoology, if confined to a single order of animals! We feel compelled to conclude that man was created and provided with the widest range of means for his enjoyment,

and that through his fall from a state of primitive purity, he became an eater of flesh.

JNO. G. ZOOK.

EATING AND DRINKING IN THE EAST.—The apparatus which is used for cooking in the East, is simple compared with ours, and the food is ordinarily no less simple. The elaborate dishes of an American or European dinner party are, for the most part, unknown in the family life of Orientals, who retain something of the simplicity of ancient times.

There are, however, all kinds of eatables in the East, but less variety is countenanced at a single meal, and the inhabitants enjoy their food to a greater extent than we, as they use more time in eating, do not hurry to gulp down their victuals as the Americans are generally in the habit of doing. The dinner-table is usually a frail affair about two feet long, and eighteen inches in width, often handsomely carved, inlaid, and ornamented. It is placed in the center of the room or near a divan. The master sits on the divan, his companions sitting around upon the mat or carpet. The wife first serves her lord—a proceeding quite different from the fashion in America, where the gentleman is sometimes expected to wait upon the ladies and neglect himself for their satisfaction.

The people of the East in large cities, dine at nearly the same hours as we do, taking an early breakfast before going to business; dining late, on returning home, at evening. The meal at noon consists of bread and fruit, and is considered a lunch.

The poor retire to bed after dinner, or sit by the open fire, which is supplied by pitch-pine. Eastern people are very sociable; when a stranger visits them, he is cordially invited to partake of their repast. They always converse a great deal while eating, and enjoy a jest more then than at any other time.

The victuals when served are invariably well-cooked, and there are various gravies and sauces accompanying them. They indulge as little as possible in drinking during meals, but after satisfying their appetite, partake of their native wines, which they slowly sip.

The poor indulge in a beverage which may be compared with our whisky, as it intoxicates them. The ladies mostly drink coffee or tea, which they vainly imagine gives them a fair complexion.

The people of the East, as a class, understand better the art of living well; in some respects we might imitate them to our sanitary advantage.

E. BARBE.

A VEGETARIAN GROUP HOME.—A Massachusetts correspondent sends us a communication with the above title, earnestly indicating his desire to organize a movement for the establishment of a society or community of "those who are weary of the incessant scramble for life—tired of the perpetual struggle against the fraud, selfishness, and animality which characterize our common civilization." He asks as many others have lately—in similar phrase:

"Is it not time for those who have been baptized into a love of truth, purity, health, harmony, and progress, to begin to consider whether it might not be better to give their efforts henceforth to the establishment of a different system of things; to strengthen, sustain, and protect each other in true living, by means of associative life, than to continue to waste their energies in fruitless endeavors to stem the tide of corruption inside of society as it is, isolate and alone?"

Considering the conflict with the "world as it is," on the part of would-be reformers, dangerous to themselves, morally and physically, and not productive of much personal benefit in any circumstances, he would invite—

"Those who feel ready or desirous to leave behind them animal and animalizing diet, hurtful, foolish fashions, tale-bearing, gossip, and scandal, the isolate interests, mutual antagonism and financial cannibalism—and all other unsatisfactory elements of modern life-as-it-is, and to devote their energies to the building up of something more worthy the dignity and beauty of human nature—to join him in the effort to organize a 'home.'"

WISDOM.

"Think truly, and thy thought
Shall be a fruitful seed."

A SHARP tongue is moved by an unquiet spirit, and an unquiet spirit wanteth not words and complainings.

LET prudence always attend your pleasures; it is the way to enjoy the sweets of them and not be afraid of the consequences.

To individual faithfulness, and to the energy of the private conscience, God has committed the real history and progress of mankind.—JAMES MARTINEAU.

HE alone is a man who can resist the genius of the age, the love of fashion, with vigorous simplicity and modest courage.—LAVATER.

I HAVE often said that all the misfortunes of men spring from their not knowing how to live quietly at home in their own rooms.—PASCAL.

BAD luck is simply a man with his hands in his pockets and a pipe in his mouth, looking to see how it will come out. Good luck is a man of pluck, with his sleeves rolled up and working to make it come out right.

LET us take care how we speak of those who have fallen on life's field. Help them up; do not heap scorn upon them. We do not see the conflict. We may not know the wound.

VANITY, the outcome of strong Approbativeness, is the only thing which keeps most people's tempers tolerably sweet. It is like the insect which always takes the color of the leaf it feeds upon, and always finds a leaf to feed upon.

OUT of suffering have emerged the strongest souls, and the most massive characters are seamed with scars. Martyrs have put on their coronation robes glittering with fire, and through their tears have the sorrowful first seen the gates of Heaven.

"How beautiful is youth! how bright it gleams
With its illusions, aspirations, dreams!
Book of beginnings, story without end,
(Each maid a heroine, and each man a friend!)
Aladdin's lamp, and Fortunatus' Purse
That holds the treasures of the universe!
All possibilities are in its hands,
No danger daunts it, and no foe withstands:
In its sublime audacity of faith,
'Be thou removed!' it to the mountain saith,
And with ambitious feet, secure and proud,
Ascends the ladder leaning on the cloud!"

MIRTH.

"A little nonsense now and then,
Is relished by the wisest men."

"VILL you dake something?" said a German teetotaler to a friend, while standing near a tavern. "I don't care if I do," was the reply. "Vell, den, let us dake a valk."

LITTLE Alice was crying bitterly, and on being questioned, confessed to having received a slap from one of her playfellows. "You should have returned it," said the mother. "Oh, I returned it before!" replied the little girl, proudly.

A HARTFORD girl treating a too frequent gentleman rather coolly, drew from him the remark: "I fear you are not dealing squarely with me." "That's because you are 'round so often," was the quiet reply.

TAKING a cigar out of his mouth, the minister said to one of his parishioners, fond of sleeping in sermon-time, "There is no sleeping-car on the road to Heaven." "And no smoking-car, either, I reckon," said the man in reply, now wide awake.

"YOU here again, sir?" remarked a Brooklyn magistrate to an inebriate who was leaning dreamily upon the arm of an officer, ready to fall as soon as he let go. "'Scuse me, Judge," replied the victim, "I've been vazzinated four (hic), five times, an', juz I spoz'd, 's too much, 's too much."

"YOU come well recommended, I suppose?" said a gentleman to a boy who wanted an easy place. "Oh, yes, sir; the man who I was with last recommended me; he recommended me to leave and get work more congenial with my disposition."

MEDICATED HUMOR.—Dr. J. C. Ayer presented a beautiful hall, costing sixty thousand dollars, to the town which bears his name. The wood-work is all finished in cherry-pectoral, and has an Ayery appearance.—*Philadelphia Bulletin.* Any pill-ars or pill-asters about the hall?"—*Norristown Herald.* No, you pestle-ent fellow. But there is a little mortar; and as for the floor, they are inclined to drug-it. Dr. Ayer's own preference for the front of the gallery is something in the way of a patent bolustrade.—*Washington Nation.*

"JAKE," said the blushing damsel to a lover that her father had forbidden the house, "I don't care if your feet are big; I love you just as much." "Wall, Sally, I don't mind so much about the size of my own feet, but I wish your dad's were a little smaller; I should feel more confident, you know, about staying."

A PROMISING youth recently surprised his father by asking, "Father, do you like mother?" "Why, yes, of course." "And she likes you?" "Of course she does." "Did she ever say so?" "Many a time, my son." "Did she marry you because she loved you?" "Certainly she did." The boy carefully scrutinized his parent, and, after a long pause, asked, "Well, was she as near-sighted then as she is now?"

Library.

In this department we give short reviews of such NEW BOOKS *as publishers see fit to send us. In these reviews we seek to treat author and publisher satisfactorily and justly, and also to furnish our readers with such information as shall enable them to form an opinion of the desirability of any particular volume for personal use. It is our wish to notice the better class of books issuing from the press, and we invite publishers to favor us with their recent publications, especially those related in any way to mental or physiological science.*

THE PROBLEM OF PROBLEMS, and its Various Solutions; or, Atheism, Darwinism, and Theism. By Clark Braden, President of Abingdon College, Illinois. 12mo, cloth, pp. 480. Cincinnati: Chase & Hall.

After all that has been written *pro* and *contra* on the subject of Evolution, he is a bold man who asserts that he has something new to say in the matter, and puts on press an elaborate book which discusses the points of the scientists, and aims to prove them wanting in fundamental truth and logical consistency. Mr. Braden is better known in the West than in the East. A

man of vigorous mind, critical and original in his more marked intellectual qualities, a close, persevering investigator, and not yielding much heed to dogmatic opinion, he has won his way to a good place in the popular estimation.

The volume now under consideration is a product of long-continued reading and thought on the topics embraced within its covers. The author has aimed to set before the reader a true exposition of the doctrine of evolution, and of the views of its leading advocates. Chapter I. is devoted to a "Statement of the Problem;" in it the vastness of the issues involved is set forth in well-chosen terms, and illustrations are drawn from the work of eminent physicists. "Our means of Solving the Problem" is the subject of Chapter II., in which Mr. Baden insists upon "the supremacy of metaphysics over the bundles of labeled facts arranged on the shelves of the physicists, for without metaphysics their discovery and classification would have been impossible." He uses the language of Darwin, Wallace, and others, in support of "a teleology in nature" which it is customary for the naturalist to deny. The prevailing order, harmony, co-ordination exhibited in nature establish a unity in the universe which proclaims or leads to an intelligent cause, a grand, planning mind. Chapter III. treats of "Various Solutions of the Problem," in which the views of ancient and modern thinkers are set in array. Chapter IV. deals with "Tendencies of Development, Evolution, and Darwinism." Chapter V. is a setting forth of the weakness and insufficiency of such theories as Chance, Fate, Evolution. In this Mr. Braden exhibits his strength as a reasoner, going deeply into a minute analysis of the arguments of the leading theorists. Chapter VI. on "The Theistic Solution" obtains a large space in the volume, and properly so, considering the wide field of thought covered by the questions arising in it. Then the relation of Religion and Science, and the Evolution of Religion receive their share of attention.

An appendix is added to the matter in the order of chapters which discusses many topics like, "Can physical science give us a system of morality or a single moral idea? Contradictions of science in the Bible; Review of Huxley's Demonstration of Evolution; Review of Carpenter's Fallacies of the testimony for the Supernatural."

Taken as a whole, the book is valuable for its presentation of the views of leading scientific investigators, and for its really candid treatment of them.

LIFE-HISTORY OF OUR PLANET. By William D. Gunning. Illustrated by Mary Gunning. 12mo, pp. 368. Cloth, price $2. Chicago: W. B. Keen, Cook & Co.

"Facts," says the author of this volume, "do not enlarge the mind unless they are fertilized by principles." This basic fact he takes as a guide in the treatment of the profound topics embraced by the title of his book, thus aiming to do much more than to compile a number of interesting facts from the stores of the scientists, as is the object with most writers in the line of "popular science." Without being exhaustive — which would be impossible in the space of a single volume—Mr. Gunning has prepared a very readable book for the general reader, reviewing in a connected manner the career of the planet on which we live, from its primary condition of fire through the successive stages of its azoic and zoic periods, explaining here and there the nature of processes, chemical and meteorological, and noting clearly the more prominent theories in geology and natural philosophy. In the first chapter we read of the formation of the rocks and the evolution of metals. In the second and third chapters are descriptions of life in the sea, and of many wonderful traces of extinct forms revealed by sea strata. Chapter fifth is devoted to the consideration of the Ice Age, and therein we are told how mountains were smoothed and rounded, valleys and water-basins scooped out, and earthy débris, gravel, and boulders distributed about. Then, too, we are treated to some speculations upon the relation of glaciers to the polar position of the earth, and how an accumulation of ice in a certain part would disturb its axis of rotation sufficiently to lead to very uncomfortable consequences for us who can not very well change our residence just now to another member of the solar system. We are told that the continued operation of the present axis movement will bring about a change in our seasons so that "those who live in our hemisphere ten thousand five hundred years hence will have short and hot summers, and long, cold winters." Is it not time that we were thinking of another place of residence?

In chapter sixth we have a sketch of man's ancient history, with comparative descriptions of skulls representing extinct races. We scarcely agree with Mr. Gunning in his characterizing the mound-builder as "a weak, miserable, bestial savage," as we have had opportunities to examine crania from mounds, which exhibited pretty respectable development in comparison with specimens of negro and Indian crania. The inference of Dr. Farquharson that "the mound-builders were so far advanced in civilization as to house, and feed, and nurse the sick," agrees better with the moral development of crania we have seen than with the very meager showing of Mr. Gunning's illustrations.

The origin and growth of animals are the subjects of chapter seventh, while in chapter eighth the troublesome enigma of the savants, the origin of man, occupies attention. Mr. Gunning inclines to the belief of human development from a lower

order of animal condition, and still advancing toward a higher mental and physical status, but there is "after man nothing but a better man." He closes his very interesting volume with "We are re-creating ourselves. We have worked the downward slant out of the bodily eye, and we are working it out of the spiritual eye. We are still in the making. Behind us unnumbered ages of preparation, within us unspeakable potencies, before us—

> 'The highest mounted mind
> Still sees the sacred morning spread,
> The silent summits overhead.'"

THE WIFE'S ENGAGEMENT-RING. By T. S. Arthur, author of "Tom Binn's Temperance Society," "Ten Nights in a Barroom," etc., etc. 16mo, cloth, pp. 278. Price, $1.00. New York: National Temperance Society and Publication House.

What more need be said in favor of this new story of domestic life, than what is stated in the title that the veteran author, T. S. Arthur, has written it? His portraitures of life are so vivid that the principles they involve go straight to the convictions. This tale recites the sorrow and trials of a loving wife, in consequence of the lapse of her husband from the ways of sobriety and manliness; how, among other sacrifices, she was compelled to part with a diamond ring, treasured as the memento of their betrothal.

CENTENNIAL TEMPERANCE VOLUME: A Memorial of the International Temperance Conference, held in Philadelphia, June, 1876. 8vo, pp. 900. 56 Illustrations. Price $5. New York: National Temperance Society and Publication House.

No volume hitherto issued from the enterprising press of the National Temperance Society exceeds this in general value to the cause of social reform. It is comprehensive as a review of the temperance work of the past hundred years, as a biographical cyclopedia of the more prominent laborers, men and women, in it, as a tabulation of the many different orders and associations which have for their object the promotion of temperance principles among men, and as a consideration of the questions, scientific, moral, and political, which are involved in the successful prosecution of temperance work.

A full analysis of the volume would require several pages, far more space than we can devote to a notice. We must, therefore, refer to the circular published by the Society, which epitomizes the contents of the work, and which may be obtained on application.

Among the biographical sketches we note those of Wm. E. Dodge, Henry Wilson, J. B. Gough, A. A. Minor, D.D., G. B. Wakeley, D.D., Mary A. Livermore, Neal Dow, Sir Wilfrid Lawson, E. C. Delavan, Mrs. Wittenmeyer, Thomas Cook, Father Mathew, Mrs. Sarah K. Bolton, Peter Stryker, D.D., John Pierpont, David Ripley. The addresses made at the International Temperance Conference are given in full from the report taken in short-hand. So, too, the essays and papers read in the course of the proceedings have their appropriate place, forming a body of temperance doctrine and statistics which touch upon every practical question which has suggested or obtruded itself in the course of the warfare upon the liquor evil. Among the accounts of special work, the reader will find those of the so-called "crusades," which occupied a large part of public attention last year and the year before, of fascinating and instructive interest.

PUBLICATIONS RECEIVED.

THE AMERICAN LIBRARY JOURNAL—Vol. I., No. 1—Contains articles by writers of experience in library matters, and is a good showing of what may be accomplished in a new field of periodical literature. All lovers of books, but book collectors in particular, will appreciate this venture of Mr. Leypoldt, of New York.

THE SANITARIAN for January. We like the tone and matter of this number of the "organ of the Medico-legal Society." A large space is given to the consideration of public hygiene, and much interesting data interwoven.

VICK'S FLOWER AND VEGETABLE GARDEN deserves the attention of all who keep gardens on a small or large scale. Comprising upward of 170 pages octavo, it is at once an elaborate catalogue and guide, profusely illustrated with neatly engraved and colored plates. Mr. Vick has always done well in the way of horticultural catalogues, and this last eclipses all before it. Price 50c. James Vick, of Rochester, N. Y., publisher.

THE SHOE AND LEATHER REPORTER—Almanac and Year Book, 1877—Contains many trade facts if not trade "secrets."

SPEECH of Henry W. Blair, of New Hampshire, in the House of Representatives, on the joint resolution introduced by him proposing an amendment to the Constitution in regard to the manufacture and sale of intoxicating liquors. A powerful prohibition document, and meriting a general circulation.

OUR UNION, organ of the Woman's National Temperance (Christian) Union, is a well-edited and neatly printed paper. Its contributors are some of the best writers in reform literature. Miss Willard's article on "Red Tape," in No. 20, is a spicy, piquant affair. Miss Colman edits the Juvenile Department. The *Union* is published in Brooklyn, N. Y. Subscription 50 cents a year.

THE FAMILY HEALTH ALMANAC, 1877. Published at the office of *The Health Reformer*, Battle Creek, Mich. A neat little exposition of hygienic principles.

THE LADIES' FLORAL CABINET. Several numbers of this elegant household monthly lie before us, each replete with hints and information of value to the well-to-do housekeeper, and to her also who must be frugal to "make ends meet." H. T. Williams, Publisher, New York.